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1185860 - R8 SDMS

Date: June 3, 2008

Scott Brown
US EPA, Region 8 Montana Office
Federal Building
10 W. 15th Street, Ste 3200
Helena, MT 59626

**Project: RAC2 Region 8 – East Helena Site
Work Assignment No. 004-RSBD-0830 (term form)**

**Subject: Record of Decision
Part III, Responsiveness Summary (Working Draft)**

Dear Dr. D. Scott Brown:

Please find attached two copies of the Part III Responsiveness Summary (working draft) for the East Helena Superfund Site (Operable Unit No. 2). This working draft includes several minor placeholders within the comments or responses.

Pacific Western Technologies appreciates the opportunity to provide this working draft and trusts that it meets your immediate expectations. We look forward to working together toward a final responsiveness summary and Record of Decision.

If you have any questions about this working draft, please do not hesitate to call.

Sincerely,

Levi Todd, P.E.
Project Manager
Pacific Western Technologies, Ltd.



**SUMMARY OF PUBLIC COMMENTS AND EPA RESPONSES
REGARDING THE PROPOSED PLAN FOR FINAL CLEANUP OF
EAST HELENA'S RESIDENTIAL SOILS AND UNDEVELOPED LANDS**
East Helena Superfund Site (Operable Unit No. 2), Lewis and Clark County,
MT

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References (Note to Scott: References are not attached in this working draft)

Attachment: Lewis & Clark City-County Board of Health Draft Regulations

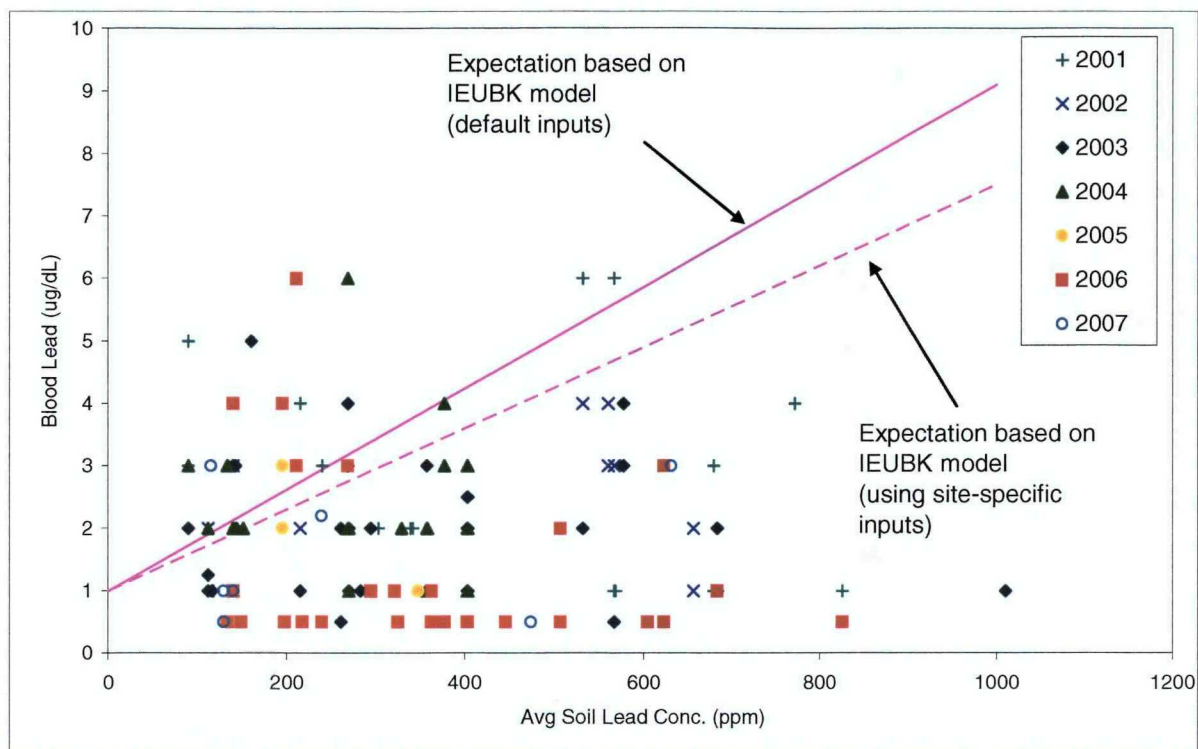
Attachment: ATSDR Health Consultation

Appendix: Public Comments

Note to Scott: The sequence of the attachments may need to be revised

*To go directly to a topic, place your cursor over the heading of your choice, then press "control"
and "click" your mouse simultaneously.*

Figure I - 3. Relation Between Average Soil Lead and Blood Lead Values for Children (0 to 84 Months) at Unremediated Properties in East Helena, 2001- 2007



| Year | N | Intercept ug/dL | Slope ug/dL per 1000 |
|------|----|--------------------|-------------------------|
| 2001 | 18 | 3.1 | -0.70 |
| 2002 | 10 | 2.7 | 0.08 |
| 2003 | 37 | 1.9 | 0.01 |
| 2004 | 22 | 2.0 | 0.90 |
| 2005 | 4 | 4.4 | -9.82 |
| 2006 | 33 | 1.9 | -1.80 |
| 2007 | 7 | 1.2 | 1.44 |

Average slope (ug/dL per 1000 ppm)

All years -1.41

Excluding 2005 -0.01

IEUBK Predicted Slope (ug/dL per 1000 ppm)

All default inputs 8.10

Site-specific inputs 6.50

NOTES:

If lead in soil is a significant contributor to blood lead in children, then it is expected that a plot of blood lead vs soil lead will have an upward trend. Based on the IEUBL model, this trend should be about 6 to 8 ug/dL per 1000 ppm of lead in soil. Because of the trend toward decreasing blood lead values nationally, the data must be stratified by year to have a chance to see any trends that are present. As seen, most of the observed trends are much lower than predicted by the IEUBK model. This suggests that the contribution of soil lead to blood lead is relatively small within the range of 0- 1000 ppm.

| Average and Range of Residential Soil Lead Concentrations in 2007 at East Helena Superfund Site | | | | | |
|----------------------------------------------------------------------------------------------------|-----------|------------------------|----------------------|-----------|----------|
| #- | SITE CODE | No. of Sections (1) | YARD AVG [Pb] (1) | Range | |
| | | | | High [Pb] | Low [Pb] |
| 10 | CH01 | 8 | 371 | 1393 | 101 |
| 38 | ME02 | 12 | 457 | 982 | 124 |
| 7 | CC03 | 15 | 492 | 1092 | 180 |
| 28 | MG04 | 14 | 499 | 1403 | 206 |
| 35 | MF01 | 11 | 548 | 948 | 287 |
| 20 | HA03 | 10 | 561 | 1204 | 275 |
| 4 | CD02.1 | 4 | 562 | 1144 | 181 |
| 6 | CH05 | 6 | 583 | 1852 | 40 |
| 2 | TD17 | 15 | 596 | 1172 | 254 |
| 34 | MF06 | 7 | 596 | 1060 | 420 |
| 43 | MG01 | 5 | 604 | 1003 | 192 |
| 45 | MD04 | 10 | 607 | 1364 | 250 |
| 23 | MK05 | 8 | 613 | 941 | 386 |
| 12 | CH08 | 7 | 621 | 1118 | 263 |
| 1 | TD19 | 11 | 623 | 1241 | 192 |
| 15 | TA08 | 4 | 631 | 1240 | 322 |
| 33 | MF05 | 4 | 668 | 989 | 249 |
| 29 | DD01 | 8 | 671 | 1193 | 437 |
| 26 | MI06 | 13 | 672 | 1021 | 337 |
| 27 | MI03 | 7 | 675 | 959 | 48 |
| 41 | MC04 | 10 | 681 | 1101 | 465 |
| 42 | MD05 | 10 | 706 | 1096 | 378 |
| 14 | CJ02 | 4 | 710 | 1298 | 284 |
| 24 | MJ05 | 6 | 710 | 1247 | 329 |
| 40 | MC01 | 10 | 711 | 1002 | 197 |
| 19 | CI05 | 6 | 735 | 1274 | 340 |
| 31 | MG02 | 10 | 744 | 1467 | 55 |
| 25 | MJ04 | 6 | 745 | 963 | 428 |
| 3 | CD02 | 8 | 748 | 1239 | 181 |
| 30 | DD01.1 | 3 | 808 | 1193 | 569 |
| 37 | ME06 | 5 | 819 | 1019 | 407 |
| 21 | MK08 | 4 | 876 | 1201 | 674 |
| 39 | ME01 | 8 | 879 | 1077 | 415 |
| 36 | TH17 | 8 | 895 | 1340 | 543 |
| 9 | CI08 | 4 | 975 | 1139 | 652 |
| 22 | MK07 | 7 | 980 | 1421 | 694 |
| 18 | BB02.1 | 2 | 982 | 1016 | 949 |
| 44 | MD06 | 12 | 1017 | 1552 | 546 |
| 46 | ML01 | 7 | 1038 | 1433 | 572 |
| 13 | CK03 | 13 | 1066 | 2464 | 120 |
| 17 | BB02 | 5 | 1157 | 1352 | 949 |
| 5 | CC05 | 6 | 1507 | 3620 | 227 |
| 32 | LC01 | 5 | 1586 | 2590 | 452 |
| 11 | CH09 | 5 | 2058 | 3650 | 777 |
| 8 | CH06 | 4 | 2788 | 3817 | 1654 |
| 16 | PC02 | 21 | 1902 | 2465 | 866 |

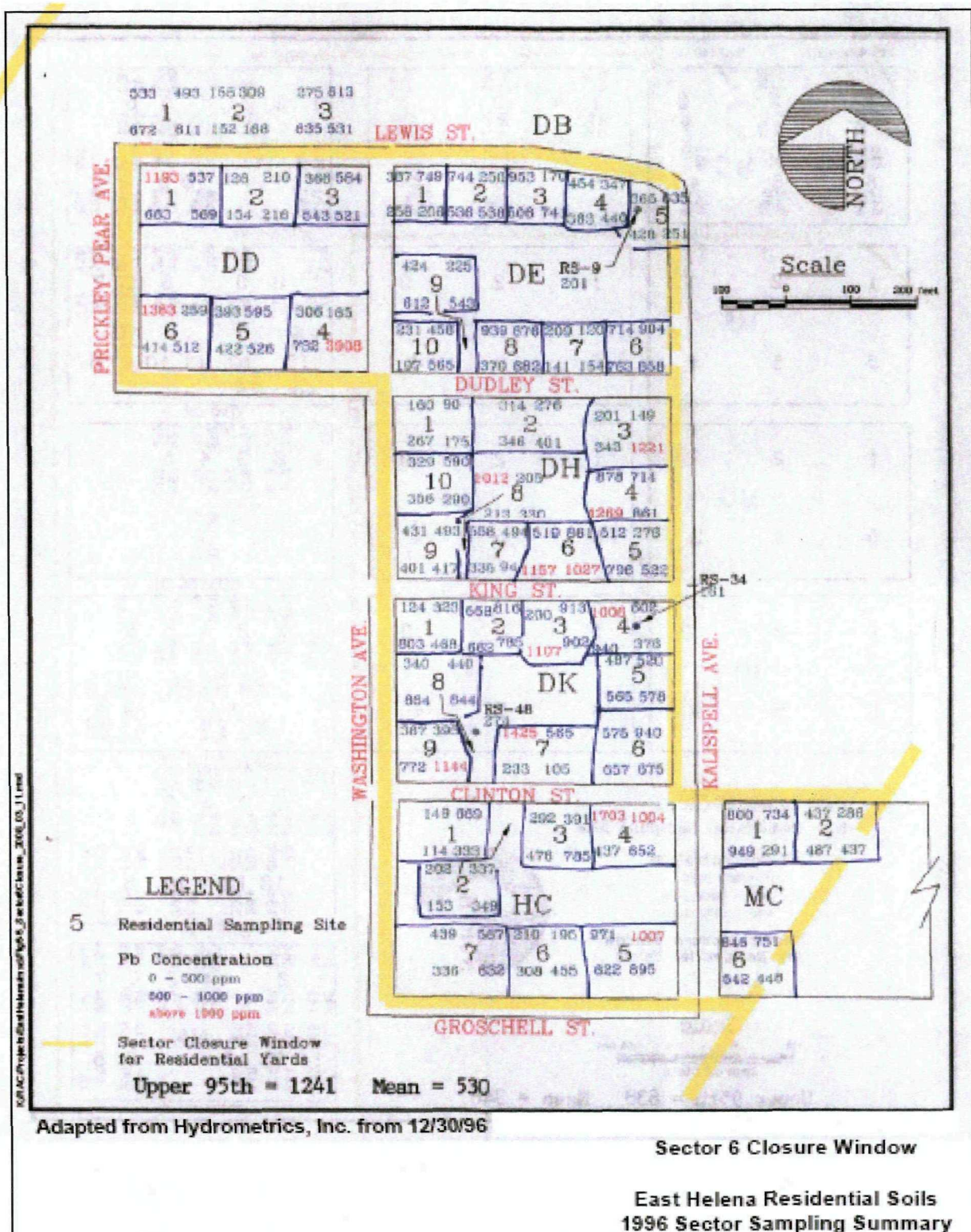
| | |
|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-----------------------------------------------------------------------------------------------------------|
| | Exposure unit average less than 610 ppm Pb. |
| | Absent sampling bias, (see footnote), these yards likely to be less than 610 ppm Pb. |
| | Of 45 yards cleaned up in 2007, only these 8 exhibited an exposure unit average greater than 1000 ppm Pb. |
| <p><u>Note 1:</u> Site-specific sampling protocol requires medium-or large-sized yards to be divided into 60-ft x 60-ft sections, and 60% of samples must be biased for highest lead concentrations. Yards divided into 10 sections, for example, will require 50 separate sample locations; 30 or more being biased for highest lead concentrations.</p> <p><u>Note 2:</u> Note the lower end of each range and the high variability. There appears to be no relationship between the highest and lowest values. As soil sampling has progressed away from the smelter, variability has increased significantly. These data and the conclusions drawn from them support continuation of the current two-part lead cleanup action level (1000/500 ppm) and the associated protocols for sampling and decision-making.</p> | |

Note: This will be 11 X 17 fold out to keep the entire figure on a single page and make it more readable.

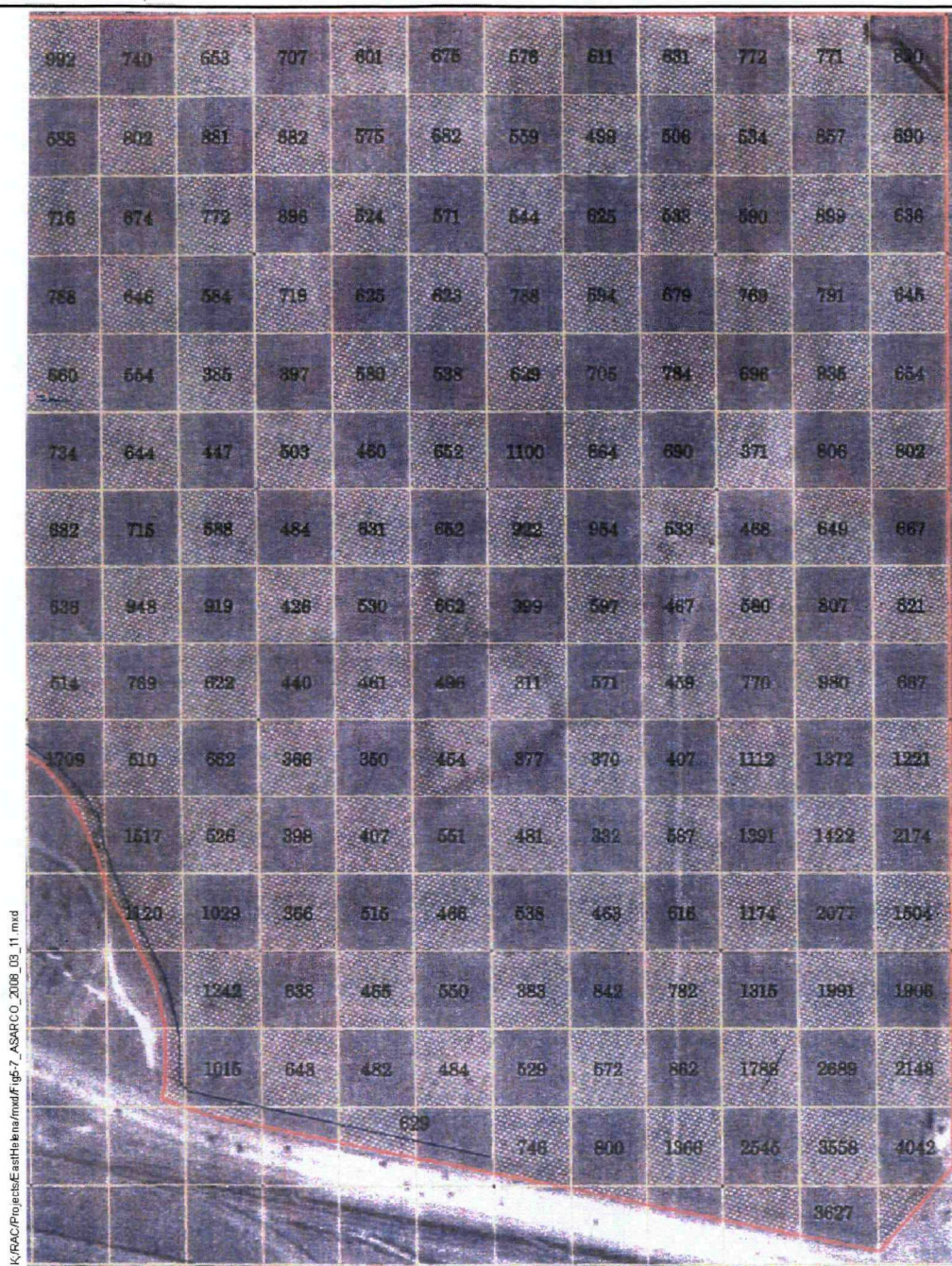
The extraordinary degree of variability prevalent in East Helena's residential settings is also illustrated by the following figure. This figure shows actual soil lead concentrations of 48 individual yards located in a neighborhood near the East Valley Middle School. The examples shown are typical throughout all the peripheral or "outlying" neighborhoods of East Helena. These are the neighborhoods that remain to be evaluated for cleanup. All of the more central neighborhoods of East Helena, including the "Yellow Zone," have already been cleaned up.

Although a high degree of variability was also prevalent in the central neighborhoods—those closer to the smelter—it is important to note that their soil lead concentrations were significantly higher than in the peripheral neighborhoods. With very few soil samples being less than about 1,500 to 3,000 ppm lead in the "Yellow Zone," and with maximum values of 6,000 ppm or higher, there was no question that all properties should be cleaned up. Thus, the development of protective cleanup action levels was not so important for the central neighborhoods, but rather for the "outlying areas." These areas also exhibit highly variable soil lead concentrations; however, their low values are often significantly less than 400 to 500 ppm, their whole yard average values are generally around 500 to 750 ppm, and their maximum values may exceed 1,000 to 1,500 ppm.

An examination of the variability present within individual yards, as well as within the neighborhood itself, as shown in the figure is instructive. For example, Yard No. 3 of Block DH has a high lead value of 1221 ppm, a low lead value of 149 ppm, and a yard mean of 478 ppm. This yard qualifies for cleanup by virtue of its single, high value exceeding 1,000 ppm, as does Yard No. 4 "next door." But, the other yard "next door," (DH-2) and roughly half of the remaining yards in this block would not qualify for a cleanup under any reasonable cleanup strategy.



Note: This figure will be an 11 X 17 fold out.



Adapted from Hydrometrics, Inc.
Sampled November 2001

Figure 5-7
Example of Soil Lead Concentrations
In Undeveloped Lands
(ASARCO Lamping Property)

Note: This figure will be an 11 x 17 foldout.

PART III

DRAFT RESPONSIVENESS SUMMARY

EAST HELENA SUPERFUND SITE (OPERABLE UNIT NO. 2)

June 3, 2008

INTRODUCTION

PART III RESPONSIVENESS SUMMARY

INTRODUCTION

This Responsiveness Summary provides the comments received during the public comment period on the Proposed Plan (the Plan) for the remedy of the East Helena Superfund Site (Operable Unit No. 2) and the responses of the U.S. Environmental Protection Agency (EPA) to the comments. Minutes and transcripts of public meetings are included, as are Supplemental comments (and responses) received from local government entities after the public comment period was closed. All comments in this document have been considered in EPA's final decision on selection of the remedy to address the contamination at the site.

The East Helena Superfund Site (Site) OU 2 consists of the Asarco smelter, all of the City of East Helena, Montana, nearby residential subdivisions, numerous rural developments such as farms and homes on small acreage plots, and surrounding undeveloped lands. This Responsiveness Summary addresses Operable Unit 2 (OU 2), which consists of non-smelter property surface soils in the residential areas, irrigation ditches, rural developments, and surrounding undeveloped land.

OVERVIEW OF THE PROPOSED PLAN

EPA released the Plan in January 2007, after consultation with the Montana Department of Environmental Quality (MDEQ), Lewis and Clark City-County Board of Health, and the City of East Helena. The Plan describes the cleanup alternatives considered for the site, identified the preferred cleanup alternative, and provided a rationale for selection of the preferred cleanup remedy.

The major components of the Preferred Alternative in the Proposed Plan (and selected remedy in the ROD) are briefly summarized here, and discussed in detail in the Decision Summary.

- Cleanup by excavation and disposal in the East Fields soil repository of the existing, qualifying residential yards and vacant lots, based on a cleanup level of 1,000/500 milligrams per kilogram (mg/kg, or part per million (ppm)) of lead in soil for a residential lot, the exposure unit. When any section of a yard has soil lead level greater than 1,000 ppm, that yard qualifies for cleanup. Once a yard qualifies, all portions of the yard with soil lead greater than 500 ppm will also be cleaned up.
- Cleanup of unpaved streets, aprons, and alleys in existing residential areas where the soil lead levels exceed 1,000 ppm.
- Whenever blood lead tests of a child and a follow-up environmental assessment of a home by health professionals demonstrate that exposure to lead in the soils of that yard is responsible for a blood lead level above 10 micrograms per deciliter (ug/dl), then that yard qualifies for immediate remedial action regardless of the yard soil lead concentration.
- Cleanup of those yards where the average soil arsenic concentration exceeds 176 ppm, even though the yard does not otherwise qualify (e.g., no section contains soil concentrations of lead above 1,000 ppm).

- Cleanup of historic irrigation ditches and water spreading channels that contain lead above 1,000 ppm when they are located within or adjacent to residential areas.
- Cleanup of the portion of the railroad right-of-way that is adjacent to residential areas where the lead concentration exceeds 1,000 ppm in the railroad right-of-way.
- Disposal of excavated contaminated soil at the East Fields soil repository by means of land application over ground that was severely impacted by past smelter emissions.
- Establish institutional controls (remedy protection measures), that will enable the Lewis and Clark City-County Board of Health and City of East Helena to adopt and enforce regulations. Institutional controls are required for residential areas, agricultural lands (such as best management practices), and agricultural lands proposed for development.
- Continue the existing East Helena Lead Education and Abatement Program for as long as the community desires and considers it to be necessary.
- Clean up undeveloped land appropriate to the future use when undeveloped land use changes are proposed through in-place treatment (deep tilling and lime amendment), excavation, or capping. For undeveloped areas that are proposed for residential development in the future, ensure that soil lead and arsenic concentrations do not exceed 500 ppm lead or 176 ppm arsenic.

SUMMARY OF COMMUNITY RELATIONS ACTIVITIES

The Proposed Plan was published on January 16, 2007, and made available to the public in the information repositories maintained at the EPA Records Center, 10 West 15th Street, Suite 3200, Helena, Montana; the Montana Department of Environmental Quality Records Center, 1100 North Last Chance Gulch, Helena Montana; the East Helena Lead Education and Abatement Program Office, 2 South Morton, Helena Montana; and the EPA web site at https://www.epa.gov/region8/sf/mt/east_helena.

Approximately four thousand fact sheets summarizing the Proposed Plan were sent to residents in the East Helena, Montana area during the month of January 2007. These fact sheets provided information regarding two impending public meetings, and identified locations where copies of the Plan could be obtained. Articles appeared in the local newspaper and a notice was published immediately prior to each public meeting. Copies of the Plan were distributed to selected local officials and interested parties. An original 60-day public comment period starting on January 25, 2007, the date of the first public meeting, was extended by 60 days at the request of several agencies, resulting in a public comment period from January 25 to May 25, 2007.

Two public meetings were held after publication of the Plan. These meetings provided an opportunity for the public to ask questions, discuss their concerns, and provide comments on the Proposed Plan. The first public meeting was held on January 25, 2007 in the East Helena, Montana Fire Hall. Local residents and representatives of the City of East Helena, Lewis and

Clark City-County Board of Health, MDEQ, EPA, and Asarco were in attendance. Minutes of this meeting were prepared and are included with this Responsiveness Summary.

A second public meeting was held on March 1, 2007, in the East Helena Fire Hall. Local residents and representatives of the City of East Helena, Lewis & Clark City-County Board of Health, MDEQ, EPA, and Asarco were in attendance. A transcript of this meeting was prepared and is included with this Responsiveness Summary.

ORGANIZATION OF RESPONSIVENESS SUMMARY

This Responsiveness Summary contains the following:

- Introduction
- Public Meetings
 - Summary of the Public Meetings
 - Minutes of January 25, 2007 Public Meeting
 - Transcript of the March 16, 2007 Public Meeting
- Public Comments on Proposed Plan
- Supplemental Comments
 - Lewis and Clark City-County Board of Health Questions
 - Letter from the City of East Helena

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PUBLIC MEETINGS

Summary of the Public Meetings

Minutes of the January 25, 2007, Public Meeting

Transcript of the March 16, 2007, Public Meeting

PART III RESPONSIVENESS SUMMARY

SUMMARY OF PUBLIC MEETINGS

January 25, 2007

EPA conducted a public meeting on January 25, 2007 regarding the Proposed Plan for Final Cleanup of East Helena's Residential Soils and Undeveloped Lands. The purpose of the meeting was to discuss the risk assessment and the establishment of an appropriate action level for lead cleanup of residential soils and undeveloped lands in East Helena. The meeting included presentations by Dr. Susan Griffin (U.S. EPA) and Dr. William Bratton (Syracuse Research Corporation), and a question-and-answer period.

Dr. Griffin discussed how various assessments are used to develop remedies effective in reducing the blood-lead levels in East Helena. Dr. Bratton discussed that blood-lead data from East Helena indicate that there has been a pronounced drop in blood-lead concentrations over time and that, during the last 5 years, no tested child has had a blood lead concentration greater than 10 µg/dl, and 98 percent are 4 µg/dl or below. Based on this evidence, Dr. Bratton concluded that the level of lead in soil that remains in the community today does not cause an observable increase in the blood-lead levels of children and that the action level proposed in the Proposed Plan (1,000 ppm) is fully effective in achieving its goal.

Topics
Following the presentations, members of the public ~~had the opportunity~~ to provide comments and questions. These included:

- how cleanup of undeveloped land will be conducted and funded
- the viability of soil tilling as a cleanup option
- the differences among cleanup levels for residential, recreational, and commercial uses
- how sampling locations and levels were determined
- the comparative use of blood-lead data versus modeling
- how modeling techniques account for physiological and behavioral differences among children as these differences impact blood-lead levels
- how the lead education program has affected blood-lead levels
- that the Superfund process includes reviews implemented every five years (Five-Year Reviews) to evaluate whether the remedy remains successful and whether there have been any regulatory changes.

March 1, 2007

Topics of comments?
EPA also conducted a public hearing on March 1, 2007 that provided the public an opportunity to comment on EPA's Proposed Plan for Final Cleanup of East Helena's Residential Soils and Undeveloped Lands. The hearing began with a presentation on the process used to arrive at the Record of Decision and on the background of EPA's involvement in East Helena.

The Lewis and Clark City-County Board of Health indicated that they were reviewing the Plan, and that the main focal points would include verifying the process and epidemiological systems that have been used for selecting alternatives, understanding the modeling and the data used to support different interpretations, and considering the ongoing process for developing and implementing effective long-term institutional controls. However, many of the public comments

on the Proposed Plan were positive and supported moving forward with the Preferred Alternative. The following are examples of the comments supporting the Plan:

- "I'd like to show my support for the Record of Decision and the two-year plan. I believe that if you expand this cleanup over a period of years, that you're going to create more harm to our children through all the remediation work going on at the sites. And the residual lead is going to be addressed through monitoring the blood levels."
- "I think that (the action level) should stay at 1,000 parts per million. I agree that there should be testing in the future, but I think we should put an end to the cleanup in East Helena and let the people get back to their normal lives."
- "Mayor Terrie Casey on behalf of the East Helena City Commission: I think the blood lead levels and their improvement over this period of time show that we're doing great. We're better than the national average. If you can't make it any better by making it more stringent, what's the point?"
- "The county lead education office does a great job. I think with them in place, I just don't see any need to continue. We need move on and get on to a new future."

**SUMMARY OF JANUARY 25, 2007 PUBLIC MEETING
FOR THE
PROPOSED PLAN FOR FINAL CLEANUP OF EAST HELENA'S
RESIDENTIAL SOILS AND UNDEVELOPED LANDS**

Meeting Place: East Helena Volunteer Fireman's Hall, East Helena, Montana
Meeting Time: 7:00 PM
Itinerary: Introduction, Presentations, Questions, Comments

The following transcript was prepared by Pacific Western Technologies, Ltd., from audio tapes of the meeting. The meeting was held in an informal atmosphere and there were frequent questions and responses conducted in a conversational manner. The questioners never identified themselves and only the question is listed below. The answers were frequently provided by two or more of the EPA representatives. At many times the audio recordings were of poor quality and difficult to understand. The following summary is not a direct transcription of the audio tapes but rather a summary of the questions and responses.

Introduction

Scott Brown (US EPA) – Opens meeting, welcomes attendees, introduces Dr. Susan Griffin and Dr. William Bratton, and summarized purpose of the meeting, Proposed Plan, and Record of Decision. The purpose of the meeting was to discuss the risk assessment and the setting of an appropriate action level for lead cleanup of residential soils and undeveloped lands in East Helena.

Presentations

Dr. Griffin (US EPA) – The site has been sampled extensively since 1983. Lead, arsenic and cadmium were identified as the contaminants of concern for the East Helena site. Receptors of concern are the children and adults living in the community. The exposure pathways of concern include ingestion of soil, indoor dust, surface water and sediment, groundwater, drinking water, vegetables, fish, beef, and grain; inhalation of airborne dust; and dermal exposure to soil and sediment.

Assessment of exposure may be completed through direct measurement by collection of blood and urine samples. Direct measurements provide a reliable method for assessing current exposure. Do not have to make assumptions of what the sources are or how much of the source is assimilated into the body. Some disadvantages of direct measurements are that there may not be benchmarks with which to compare the direct measurement, and that the data only represent recent exposure. We have benchmarks for lead and after about 60 days the children become equilibrated to the lead in their environment. This suggests that for children who have lived in the community longer than 60 days the available blood lead data are representative of the exposure that is occurring within the community.

Another way to assess exposure is to model it. One model is the IEUBK (Integrated Exposure Uptake Biokinetic Model). The model inputs are based on reasonable maximum exposure. Advantages of models include that they are not invasive (do not have to sample children's blood), that they can look at alternate land uses, and that they can identify different sources of exposure. The disadvantages of models include accuracy of assumptions, and that models often do not reflect what is actually happening. For example, one assumption is that the blood lead

concentration is correlated to the soil concentration. A plot of blood lead concentrations by the soil lead concentrations in East Helena shows that there is no correlation.

To assess risk the preferred approach is to use the direct measurements coupled with site-specific public health and regulatory models to identify elevated blood lead levels, sources of blood lead levels, and develop a remedy that will be effective in reducing the blood lead levels.

Dr. Bratton (Syracuse Research Corporation) – The EPA-proposed action level for lead in residential soils is 1,000 parts per million (ppm). The most important principle is the concept of the dose-response curve. The shape of the line for the dose-response curve for most non-carcinogenic effects is as represented on the displayed figure. The most important point on the curve is where an effect starts to occur. This point is known as the threshold concentration. The action level is targeted to the threshold concentration. At most sites the dose-response curve is unknown. At East Helena the IEUBK model results in an action level of 520 ppm for lead. The degree of uncertainty in the assumptions used in the IEUBK model was evaluated. The uncertainty evaluation demonstrates that the IEUBK model results in a concentration (520 ppm) that is very conservative and almost certainly protective. Other data are available for East Helena and may be used to assess whether the IEUBK model result is appropriate. First, if the IEUBK model was correct, the blood lead levels in children in East Helena should rise as the lead concentration in soil increased. The blood lead and soil lead data from East Helena show that there is no correlation. This indicates that the IEUBK model is overestimating the importance of lead in soil as a source of exposure in children in East Helena. At East Helena, there is no longer an observed relationship between soil lead concentrations and blood lead concentrations. Furthermore, a plot of blood lead data grouped in 2-year periods shows that there has been a pronounced drop in blood lead concentrations over time. The reasons for the decrease are likely (1) federal programs to reduce exposure to lead in gasoline, paint, solder, and food, and (2) the actions that have been taken at the East Helena site like capping airborne dust source areas, cleanup of lead in soil, and the education program. The plot of blood lead data grouped in 2-year periods also shows that blood lead concentrations in East Helena are low. If the IEUBK model were correct between 5 and 15 percent of the children in East Helena should have elevated blood lead concentrations. The existing data show that in the last 5 years no tested child has had a blood lead concentration greater than 10 $\mu\text{g/dl}$.

Dr Bratton concluded that the 520 ppm action level computed by the IEUBK model is lower than is required or necessary to protect public health. The levels of lead in soil that remain in the community today do not cause an observable increase and we can not detect its effect on the blood lead levels of children. Whatever the continuing contribution of lead in soil is it is so low as to be of no substantive public health concern. The action level proposed in the Proposed Plan (1,000 ppm) is fully effective in achieving its goal.

Questions

[Note: The people asking the questions were identified whenever possible; however, most people did not identify themselves.]

Question – While lead concentrations are going down partly due to remediation are they also going down due to the lead being pushed down into the soil by rain? Does the lead migrate down and at what time do we have to worry about the lead entering our water systems or wells?

Answer – In general lead is immobile in soil. Concern over lead in groundwater is low. If there are continuing concerns over lead in groundwater the groundwater can be tested. Rain can wash

lead dust into the soil but the lead will not go very far (1 to 3 inches) into the soil. Lead will form mineral complexes in the soil which will act to stabilize the respirability of the lead.

Question – I own 6 acres of land in East Helena that borders Highway 12. 77% of the soils are above 1,000 ppm [lead], the highest 3,300 ppm. Is that soil a hazard to the community?

Answer – Because lead is relatively stable in soil, unless it is blowing (which it is) that is the only way that the high levels might impact nearby locations. We could calculate how much soil would need to erode to impact surrounding properties.

Question – What you have just shown us with your data is that that property is having no impact on the city. Am I correct?

Answer – If the property is undeveloped and there is no child lead data there is no way to assess whether there would be an elevated risk to future child residents. The IEUBK model would suggest that there would be an elevated risk. Direct observations might demonstrate that there is risk. At this time concentrations greater than 1,000 may result in an elevated risk to future residents.

Questions – I have an undeveloped parcel of land in the City of East Helena with lead concentrations above 3,000 ppm. I have subdivided the land and would like to sell the parcels. Are you going to clean it up? Why do I or the purchasers of my property have to pay to clean up ASARCO's mess? Will I be liable if I sell the land?

Answer – Under the Proposed Plan ASARCO will not be required to clean up undeveloped land. There are several alternatives in the proposed plan that may be used to clean up the land. There is no answer about liability until the ROD is approved.

Question – If the smelting over 100 years has resulted in the top 3 inches of soil being contaminated, if you roto-tilled the top foot it would reduce lead concentrations below 1,000 ppm. Why not do that?

Answer – The depth of contamination may be 3 inches; it may be 4 or 6; but it is not 20 feet. Tilling the soil is an option that has been considered at this site and others.

Question – And you have done it on several areas. Is that correct?

Answer – It has been completed in several areas as a demonstration and it is offered as one of three alternatives for undeveloped lands.

Question – Tilling the land would be a viable option for the previous questioner?

Answer – Assuming that after we get through the public review process that all the alternatives for undeveloped land survive the review. There may be portions of the Proposed Plan that are not acceptable to other enforcement agencies or the community.

Question – There are going to be separate acceptable levels for residential, recreational, and commercial. What is the acceptable level for recreational use and define the recreational uses?

Answer – Recreational and commercial uses are different from residential use because residential use assumes that young children will be present while recreational and commercial uses assume

that young children will not be present at all, or present infrequently. There are also differences in the assumptions of how frequently people are exposed and how much soil they will ingest. The commercial action level in the Proposed Plan is 1,300 ppm and the recreational action level is 2,800 ppm as an average over an area.

Question – What is a recreational use?

Answer – Hiking, camping, hunting.

Question – We are talking in town. Are we talking about parks?

Answer – Yes.

Question – Are school playgrounds treated as recreational?

Answer – Schools are generally treated as a stand-alone category because of the high certainty that young children will be present. Years ago ASARCO and EPA agreed that all the schools and parks in town will be cleaned up to residential level.

Question – You cleaned up the schools without testing them?

Answer – We tested them but were sure going in that the residential action level would apply. All the parks and schools have been cleaned up and the levels that remain are typical of those found near the Lake Helena area – between 60 and 80 ppm lead.

Question – Could you go back to the regression slide that showed blood lead and soil concentrations? Where did you come up with 1,000? There are no data shown at higher soil lead levels.

Answer – There are no blood lead data available where soil lead concentrations are 2,000 to 5,000 ppm. It might be possible to use older data to add to the diagram. 1,000 was selected as an interim action level.

Question – The risk assessor have made the point that the 500 ppm action level is to low. Why do you agree to the 1,000 ppm action level?

Answer – Because today the community is largely in the state that it will be in if 1,000 ppm were accepted as the action level. If the 1,000 ppm action level was not protective and a 500 ppm action level was required then the blood lead data would not be where they are. They would be up. We would be seeing kids with blood lead levels above 10.

Question – Out of the hundreds of blood lead measurements there are only 30 or so shown on the figure. How were those data points selected?

Answer – The data points are all children blood lead concentrations where we also know the soil lead concentration at the time the blood lead concentration was measured.

Question – The few samples shown seem like a weak database.

Answer – The data shown are only a small fraction of the available data. We do know the soil lead concentration in yards across the community. We do know the blood lead levels of the children in the East Helena area. You can put those two together to get a much larger database.

What the figure shows is that the direct relationship between soil lead and blood lead in the IEUBK model does not always hold true and tends to over-predict blood lead levels.

Question – Then you have many more data points that could be shown?

Answer – We have lots more soil lead and lots more blood lead but the data are not paired. We do not have a lot of matched pairs. This data set while not complete is a statistically valid number of samples of a child's blood lead and soil lead level from where that child was living. In 2006 I [got data for] another 157 children and we developed another database where we had these matched pairs and if we wanted to incorporate those into the figure. I am almost certain that they would lend greater significance to this lack of a relationship. While we did not apply them statistically you can look at them and see that there is no relationship. There were 3 kids out of 157 with blood lead above 4 $\mu\text{g}/\text{dl}$ and the soil lead levels were all 200 to 300 ppm up to 600 to 700 ppm and yet all the blood lead levels were low.

Question – That could also be that the kids were living in an older house or newer house.

Answer – That is why there is a lead education and abatement program that takes it to the next step. If there is an elevated blood lead concentration the County lead program tries to find out why. Is there lead paint, hobby, or pica child? Is it related to the soils? They have been unable to find any situation where the yard soils are a significant source.

Question – Do you think that the additional data should be added to the figure?

Answer – There are 60 some matched pairs. The figure should have been updated. More data are better.

Question – What do the dots on the figure represent?

Answer – The dots represent the blood lead level of a child at the average yard concentration.

Question – The blood lead standard is 10 $\mu\text{g}/\text{dl}$. There are some organizations that feel this level is too high. Do you have any comment?

Answer – There is a lot of debate in the scientific community as to whether the 10 $\mu\text{g}/\text{dl}$ is too high. It is widely believed that neurological effects of lead have no threshold. Can we clean up to zero? No, it is impossible; there are too many sources of lead including diet, air, multiple sources. As a matter of policy the regulatory community must establish some type of level at which to take action. And for blood lead the CDC, EPA, and medical community have established 10 $\mu\text{g}/\text{dl}$ as the level of concern.

Question – Did the CDC propose lowering the level of concern at one point?

Answer – It has been considered but at this time the level has not been changed. After the ROD has been signed the Superfund process has a Five-Year Review to evaluate whether the remedy is successful and if there have been any regulatory changes. If the level of concern is lowered in the future the remedy would have to be reevaluated and potentially modified at that time.

Question – Based on last years testing (of blood lead) how do our kids compare the national average of lead levels?

Answer – The national average is 1.7 µg/dl and the East Helena average for children 6 years old and younger is 1.3 µg/dl.

Question – Is that only of the children that have lived here before? Or is it including children who moved in at age 3?

Answer – The data include all children who have been tested even if they moved in 2 days before testing.

Question – Is taking an average of the soil concentration from the four quadrants typical of the way EPA address other sites across the nation?

Answer – About 10 years ago EPA nationwide got together to decide how to sample yards for lead sites and how they were going to evaluate the risk. It is fairly standard to divide yards into quadrants and composite samples and look at the average for the yard.

Question – Can you define quadrant?

Answer – The average yard in East Helena is a small property. The yards in old East Helena proper are generally less than 8,000 to 10,000 square feet. When a yard is that size it is divided into 4 quadrants. In the agreement that DEQ, EPA, and ASARCO had, three samples would be collected from each quadrant and brought together or composited. This would result in four numbers, [one] for each of the four quadrants. Let's say that you had 800, 200, 150, and 2,000 ppm; and it is not an exaggeration. You rarely find a yard that is 700, 600, 400, 800 ppm. I could show you hundreds of yards that are so variable that you wonder what is going on there. But when you average the yards, after the cleanups that have already been completed, you rarely find a yard that has an average that is greater than 700 or so. We talk about an action level of 1,000 for East Helena. That action level is based on quadrants. It is a conservative approach. If one sample in a yard is above 1,000 ppm the entire yard is cleaned up to 500 ppm. This approach was negotiated in 1991 between ASARCO, the community, county, DEQ, and EPA. There were a lot of yards 8,000 to 9,000 ppm and they are all gone. They were all cleaned up. The flour consistency concentrates that used to be outdoors and blow into town are gone. The streets have all been swept. Now the plant has closed and the air is no longer a concern but the yards are cleaned up if any portion is above 1,000 ppm. The average concentration of yards yet to be cleaned up is 700 to 800 ppm.

Question – The concern with quadrants is that some lots are 6 acres. How would you break that up?

Answer – On undeveloped land every other acre is sampled. Each sampled acre has 16 sub-samples collected and composited. Much less intensive sampling therefore there is much more uncertainty than compared to yards. At LeCasa Grand or Eastgate the yards are sometimes 30,000 to 40,000 square feet. What we do is divide the yard into 60 by 60 foot sections and then in every section composite samples are collected. There are some yards in the outlying areas that are one quarter to one half acres that are developed where there 40 or more samples.

Question – Are the concentrations generally less when you get further away from the smelter?

Answer – They are generally less but until you look at yards neighborhood by neighborhood there are some baffling things that we know are there but cannot explain them. For example, years ago there were water-spreading ditches that spread out across the north end of town and we have

found very high arsenic and lead levels. We sort of stumbled onto them in areas where we did not expect to find anything.

Question – Do you think they washed out there?

Answer – They washed out of the plant at the time when fine concentrates were stored outdoors. Floods came and washed them down the stream and deposited them in fingers in the water-spreading ditches. They were deposited way out by Canyon Ferry Lake.

Question – One of the things you mentioned in the Proposed Plan was that there was going to be some kind of remediation around the irrigation ditches. I have property north of East main and there is a ditch that runs out towards Eastgate. Are they going to take the ditch out?

Answer – No. We know the areas with flood waters that may have received concentrates from the plant. In the 1960s and the floods in the 1980s we know that there is a high probability that there is some deposition of lead and arsenic in those areas. They need special attention and have not been fully characterized. We are proposing that they will be treated separately from the yards.

Question – How often do you sample?

Answer – We sample a yard once.

Question – If you sample a yard once before the plant closed is that good enough?

Answer – Those yards that have been cleaned up we take about 10 percent of them and sample them again. It is called confirmation sampling to ensure that when the plant was operating the remediation worked and the yards were not being re-contaminated.

Question – Do you continue to knock down the stack?

Answer – We continue to do that each year. We take a percentage that have been cleaned up and resample them. We have not seen any changes over time.

Question – Is that the five-year review you mentioned?

Answer – No. We do it every year. The contamination was deposited over 100 years and there are few changes over the last 10 to 15 years.

Question – I got one here that says 13 years ago with one concentration of 966.

Answer – I don't know your individual property.

Question – You said sorry, tough. We don't care if your little boy is playing in the yard.

Answer – We never said tough. We have an action levels and now is your opportunity if you feel they are not suitable, we invite your comment.

Question – Back at the very beginning you were talking about your modeling. You mentioned that you used default site information values. Could you talk a little bit about the default site information?

Answer – I'm not sure what part you are talking about.

Question – It was back when you were talking about the children's lead model. You mentioned that you used default values. Given that there is so much data available for this area why wasn't this data used? Why did you use the IEUBK model with default data when there are other models that could use that would take into account all the data? If you say that the IEUBK model is not working and that 520 ppm is not the correct number and that 1,000 is acceptable what would the other models say that have more data?

Answer – When we were screening out all the other analytes the IEUBK model and other children's models were used with the default values in it. As such it is a conservative screen meaning that anything that is below it is clearly not a risk. Anything above that number is something that we are going to evaluate further using community-specific and mining and smelting-specific information. That was the first step. The most recent application of the IEUBK model at this site does utilize all the reliable site-specific data that we can obtain. When you apply the IEUBK model using all default data and no site data the action level is 400 ppm. That is the national default number. At this site EPA invested the effort to collect additional data of two main types. The first is how well the lead in the soil is absorbed. The lead at this site is absorbed somewhat more than is assumed by the default IEUBK value. That has the effect of pushing the action level down. But we also collected data on the lead levels of indoor dust. The IEUBK model assumes as the default value that the lead level of indoor dust is 70 percent of that in outdoor soil. For example, if the outdoor soil lead concentration is 1,000 ppm the IEUBK model assumes that the indoor dust would have a lead concentration of 700 ppm. The direct measurement shows that that is a substantial overestimation. We have observed this at many sites. On average the relationship between soil and indoor dust is between 10 and 40 percent with 20 to 25 percent being common. At this site we found a value of 17 percent. When you add the 17 percent value to the model it drives the action level back up to 520 ppm. Those are only two of the things that go into the IEUBK model. If we could we would measure the amount of soil and dust ingested by children but that project is of such incredible difficulty, cost, and complexity that it was decided to be infeasible. We have collected the data on the things we can collect it on that is feasible and that is why the number is 520 ppm and not 400 ppm.

Question – Since you addressed the second part of my question as why this model. Are there other modeling techniques out there that were used?

Answer – Yes there were. When we were talking earlier about the blood lead data what we were advocating is a combined weight of evidence approach that utilizing the blood lead data, the blood lead model with community specific and smelter specific inputs, and statistical and epidemiological models which look directly at the relationship between the blood lead levels and different sources of lead. Bringing all these tools and all this experience together is how we arrived at the conclusion of a 1,000 ppm cleanup level with the confidence that it was going to protect the public.

Question – The 10 µg/dl number you haven't really talked about, especially with an action level of 1,000 ppm, of the chronic effects of exposure to low levels of lead to children. This gentleman over here has 900 ppm lead in his yard and with young children may be pushing it. There are also differences in children themselves. This is saying that all children are statistically the same with lead uptake.

Answer – We are not. As I mentioned before we are looking at the most susceptible members of the population which are children less than 7 years in age. Older children and adult need to have

much larger doses of lead to see the same effects. One thing in the model is a parameter that looks at the variability among children as a result of physiological differences and behavioral differences. I talked earlier about the bell curve and how by law we are required to focus on the people on the high end of the bell curve. This parameter for variability requires us to go to the high end of the curve and look at the children who are getting the most exposure who have the behavior that brings them into contact with lead the most and have the physiology that would allow them to absorb the most. So we are accounting for the variability of children.

Question – If 520 is not the number and 1,000 is the number would a number in between be a better alternative? The alternative 2R and 3R that is the 1,000 down to 500, would some level in between or a mixing of the alternatives be more appropriate?

Answer – I think it is important to separate risk considerations from risk management considerations. If you believe that the weight of evidence is sufficient to conclude that 1,000 is protective and that is not uncertain, there would be no clear benefit to choosing an action level below 1,000. If you say that there is substantial uncertainty that 1,000 is protective then you could conclude that a lower action level would be appropriate. This argument comes down to an issue of confidence in the observations and understanding as to why they are inconsistent with the predictions. And deciding whether a prediction based on a model that uses a lot of the inputs that you would be surprised how weak some of them are or would you prefer to lay your confidence on the observations. When assessing the observations you must ask how good are the observations. Twenty-five data points does not seem like much. That is a valid point. This is another point where judgment enters the evaluation. How much evidence is required? We do not have just 25 data points. We have 25 or now about 50 paired data points. We have over 1,000 blood lead data points and thousands and thousands of soil lead data points. So don't get too focused in on the graph. One of the arguments that is often made is that the blood lead data are not representative so they shouldn't be relied upon. I believe that by looking at the map to see where the samples were collected to see that the blood lead data cover the spectrum of the community. Can there be difference of opinion between individuals as to how much confidence to place in the data? You bet. That is where the judgment comes in.

Question – There has been a very good education program. What would the model results be if there were no lead education program? Might those blood lead levels be up higher?

Answer – One of the studies that I have been involved with was the Three Cities Study – Boston, Baltimore, and Philadelphia. The purpose of the study was to look at how effective education alone is for reducing blood lead levels, environmental abatement alone would be, and a combination of the two. One of the findings was—these were not kids with low blood lead levels, these were kids with high levels from lead-based paint dust in the homes etc.—was that blood lead levels dropped in the first year for education alone; however, by the second year they started to go back up again. When you combined environmental abatement with education the lead levels stayed down. But education alone will not keep blood lead levels down. What I find comforting here is that we have serial blood lead studies going back to 1994 or 1995 that are showing this trend (downward). I don't believe that education alone is doing this. I think there are a number of factors here including the federal program to reduce lead in gasoline and lead-based paint.

Question – When did that occur?

Answer – I don't remember exactly. The late 70s or mid 80s, somewhere in there.

Question – I think it was 1976.

Answer – Just because the law was passed in a certain year doesn't mean it was instantaneously out of the environment. In fact leaded gasoline was still available for much of the 80's. The combination of federal regulations, reduced smelter emissions, and yard removal has resulted in reduced blood lead levels.

Question – On the regression of the soil lead to blood lead data you have the yard average. What does the graph look like when you use the highest sample from the yard? Does it show an upward trend?

Answer – I don't think I have generated that. We could generate it. I would be surprised if it would show a clear pattern. I think if anything it would be more nearly random. I will generate that graph.

Question – You spoke in your presentation about how you used a model to come up with your action levels for East Helena. I am curious why you are dismissing the model understanding that you have site specific data. But it also seems to me that based on what I believed I heard about action levels that the 1,000 ppm action level was developed in the early 90s based on the fact that there were a lot of properties to clean up. And I haven't heard that the action level is based on anything risk based other than that you can correlate it to your blood lead data and that you don't think you see an increase so it must be OK. I find it interesting that you used this model to predict what you are going to use a cleanup levels on all other sites that you would still simply dismiss it here and double your cleanup level. I am curious as to why you would dismiss the model?

Answer – There are a couple of question in there. The first is that I am not dismissing modeling approaches. It is what EPA prefers because at a majority of site we collect very little data and hence we will use the little data that we have along with generic national default values in the model. Are we cleaning up more than we need to? More than likely. Do I have information to move away from that? No. So when there is all kind of doubt, when the information is simply not available we need to be prudent and conservative. However, when we do have community specific information and information specific to mining and smelting sites we have confidence to move away from the default position and that is what I was advocating here. We don't need to rely on a generic out of the box model and apply it to every one. It is very conservative. When we have reliable blood lead data, when we have site specific information, we can use a variety of other tools to look at a strong weight of evidence approach.

Question – Do you want to use site specific information? I thought that you said that you used site specific information in the model?

Answer – That's true, but it is for a short list of the inputs. I have never counted how many inputs are required to run the model, but it is a long list. We filled in a few of the ones we could alter but the rest remained default values. The amount of soil ingested remains default and, while I may be going beyond what I could defend if pressed, I personally think that is the input parameter that is most suspicious, most likely to account for substantial disagreements between the direct observations and the predictions. It happens to be a parameter that we have no capability of doing anything about.

Question – Aren't there studies that show when you have lead in your system it never leaves your body but that it migrates from your blood into your bones?

Answer – Pharmacokinetics of lead have been extensively studied. Once lead is absorbed into your system it will be absorbed into your bone matrix and different tissues. Over time you come into equilibrium with your environment. If you have a very low lead environment you will tend to excrete the lead in either urine, feces, skin, hair, nails but you will never get to zero. There is always a background level of lead that you are exposed to. Every time you eat something there is a small amount of lead. So there will always be a small amount of lead in your blood. And the lead that is in bones will tend to stay there until you have some stressful event like childbirth. If you have a lot of lead stored in your bones it may come out in childbirth. If you lose a lot of weight that may cause lead to come out of the bone. But the general rule is that you come into equilibrium with your environment.

Question – So if it comes out of your bone will it go back into your blood?

Answer – It will go back into your blood. In the past when mothers had very high blood lead levels, on the order of 20, 30, 40 $\mu\text{g}/\text{dl}$, there was a concern that the fetus could be exposed—where lead would come from the bone and pass through the placenta to the fetus.

Question – When you are relying on these tests of the blood lead levels that is only a snapshot of that point in time?

Answer – It is an idea of what your blood is in relation to your environment. If someone has lived in an environment more than two months then that gives us a good idea of what the sources of lead exposure to you are.

Question – How long does the lead stay in your blood? If I ingest something that had lead how long would it stay in your blood?

Answer – First of all it is important to recognize that the adverse effects of lead are generally thought of being the result of long-term exposure as opposed to a short pulse of exposure. That isn't to say that if you had a short high pulse there might not be a problem. It is just that the toxicological community doesn't have any clear idea as to how to deal with that and so when we talk about 10 $\mu\text{g}/\text{dl}$ it is not a never-to-be-exceeded or some thing bad will happen. That is a long term average of an individual should be less than 10. If you happen to be an individual with a low exposure and your blood lead was normally low, 2 to 3 $\mu\text{g}/\text{dl}$, and you underwent some event where you had high exposure your blood lead would rise over a day or two. Then if your exposure were just that one event your blood lead would fall back to where it was or slightly higher with another 2 to 5 days. The kinetics of how blood lead levels change over time has been well studied both in humans and in animals. It does not respond instantly. It responds rather slowly compared to other things like alcohol. It responds over a matter of days to weeks. Never the less it does change. As your typical lead exposure changes your blood lead levels will also change accordingly.

Question – It sounds as if lead has a relatively short residence time in blood. Would it be true if you are sampling children you would want to be sampling them during the time of greatest potential exposure to dust, meaning summer or the dry season?

Answer – That is often an important consideration in the design of a blood lead study. You typically, if you are only going to sample once, you would sample in late summer or early fall, because it is considered that that is the time of year when outdoor exposure to dry soil will be at a maximum. Studies have been done to see how different it would be if you collected them in the middle of the winter. Depending on the quality of the study you can definitely see some trends

but it isn't a roller coaster; it is a gentle roll. If the community wide average is 5 in the summer it is 4 in the winter. It is an issue and that is why blood lead studies are typically timed for the peak exposure so that you don't over look anything. But you shouldn't think of that as something that is an absolutely critical element. You have blood lead data collected in March or December it would be pretty representative.

Question – You said that the 10 µg/dl level is based on long term exposure. What do you mean by long term?

Answer – Like several years in the life of a child. When the IEUBK model is applied it computes the average blood lead from age 0 to age 6. During that time the blood lead levels will be fluctuating as the body weight changes, as the behavior of the child changes. The IEUBK model assumes, without much data, that children aged 2 to 3 ingest more soil than children aged 1 or 4 and 5. The model has age specific inputs. If you examine blood lead as a function of age it sort of wobbles around and it is a little higher at ages 2 and 3. What the model reports out as the key parameter to determine whether you have a problem or not is the average.

Question – So if a child had high blood lead for a year of their life and it was fairly low at other time the average could well come below 10.

Answer – I would never personally say that is OK. And I doubt there is anyone in the lead risk assessment community that would say that 30 for a year was nothing to worry about. The EPA and federal agencies don't have firm toxicological basis for knowing how to deal with transient health issues. One way, highly conservative, would be to say the highest it ever gets is 10 then the average must always be below 10 and therefore you are safe. So every once in a while when you are worried about short-term transient exposure that you think there is going to be a spike, I have seen cases where people say I don't know how high is a problem but I know if it doesn't get higher than 10 it isn't a problem. We need to keep the adverse effects in perspective too, because in studies of children 2, 3, 4 years old we know that blood lead levels of 10 to 15 µg/dl are associated with IQ deficits of 1 or 2 points, short attention span, and hand-eye coordination. You can see small statistically significant differences between populations but you can never tell on an individual. So all we can say is that children that we have measured in those age groups have shown those small deficits. What we do is say as a general rule is that anyone [with a blood lead level] above 10 µg/dl is unacceptable and we want to bring that down. Whether that occurs over one year, two years; I don't know. I don't know if anyone can tell you but we just say that if you measure it one time it is too much, and has to come down.

Question – Back in 1975 and 1983, 90 children and then a couple of hundred children were tested. In 1975 the average blood lead level was around 30 µg/dl and the average blood lead level of children in 1983 was around 20 µg/dl. Two thirds of the children were above 10 and one third were above 15 µg/dl. What of those people?

Answer – Anyone growing up in the 50s, 60s, 70s, your average blood lead level was between 15 and 20 µg/dl.

Question – Right now?

Answer – When you were children in that time period.

Question – Are the graphs up there of East Helena?

Answer – In general, Yes.

Question – With 2000 you have a little 10 next to it and then 2005. What is that?

Answer – That is the number of individuals observed in that year.

Question – I am trying to grasp the significance.

Answer – This is a graphical summary of the blood lead data collected from 2000 to 2004. The data set of blood lead levels shown in this graph, which I believe is restricted to children 0 to 6 years old, there may have been more blood lead levels collected but older children are less susceptible and of less concern so we focused on the most susceptible 0 to 6. There were 254 of them. How should I summarize them for you? This is the lowest value of the 254, this is the highest of the 254, 90 percent of all the values fall within those two lines, and 50 percent of all the values fall between these two lines, and that is the average. This is another graph that I should have updated. In 2006, there were 157 and if they are combined with the 2005 data there are 170 data points. And it stays very low.

Question – How do these data compare to other sites you have experience with?

Answer – Better.

Question – Can you be more specific about where and how many kids participated?

Answer – The site I am most familiar with is the Leadville, Colorado site, where a similar community blood lead program has been in place. At that site the soil action levels is 3,500 ppm. Because that level was higher than people were accustomed to a community program was put in place to monitor the blood lead levels to guard against the possibility that the 3,500 was a bad choice. If so what would have happened is that what we would have seen is the blood lead levels staying high. But just like here they fell partly due to actions at the site and partly due to national actions. We developed a rather complex statistical procedure for declaring how good is good. This (East Helena) would have passed in the first test. At Leadville, it took 5 years. And they just now—after 5 years of continuous cleanup driving down the lead levels—they passed.

Question – The residential action level was 3,500 ppm?

Answer – Yes. We have another mine site in Aspen, Colorado which had soil lead concentration in excess of that. The community did not want a remediation program but what they agreed to was 3 year blood lead monitoring program. At the end of three years if all kids were below the 10 µg/dl EPA agreed to leave town. And that is what we did. For three solid years not one child exceeded 10 µg/dl.

Question – Where have you cleaned up sites to less than 1,000 ppm?

Answer – We have cleaned up a number of sites to 400 ppm simply because we did not collect any additional data. Typically they tend to range from 400 to 1,200 ppm as cleanup levels.

Comments

No comments were made.

Concluding Statement

Scott Brown (US EPA) – It is true that the 1,000 ppm action level for East Helena can be described as a negotiated figure. Many of the community leaders at that time said that we know there are many yards above 1,000; let's get them cleaned up. Then see if that was adequate. We on the other hand are following guidance and used the lead model because we wanted to be as conservative as we could. So we said that it should be about 500 ppm. The community asked us to give 1,000 ppm a try and evaluate it over time. So we did that. But we negotiated with ASARCO that if any portion of the yard is above 1,000 the entire yard would be cleaned up to 500 ppm. The action level can be characterized today as negotiated or many things. The real overarching question is does it work? Our goal was to get [to where] 95 percent of the kids were below 10 $\mu\text{g}/\text{dl}$. We thought that was impossible, that we would never get that in East Helena. We got there within a few years and then set the goal of getting the average down to the national average. We achieved that and in the past few years we have had no child above 10 $\mu\text{g}/\text{dl}$ and 98 percent are 4 $\mu\text{g}/\text{dl}$ or below. It is an action level that is not accurately depicted as 1,000 ppm because it is not really twice as high as an action level of 500 ppm. When you understand the makeup of the yards in East Helena, when you have looked at a few thousand yards and what they are like and the great variability that exists here you get the understanding why the two part cleanup level does make sense for East Helena. As far as I know it is unique in the United States. When you have an action level of 1,000 or 1,200 ppm you take the yard average and that is what you get. I am pretty sure that if the average isn't 1,200 then the yard is not cleaned up.

PROPOSED PLAN FOR FINAL CLEANUP
OF EAST HELENA'S RESIDENTIAL SOILS
AND UNDEVELOPED LANDS

TRANSCRIPT OF PUBLIC HEARING
Held at the East Helena Fire Hall
East Helena, Montana

March 1, 2007
6:40 p.m.

REPORTED BY:

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ORIGINAL

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1 WHEREUPON, the following proceedings were had:

2 (The public hearing was opened by Scott Brown at
3 6:40 p.m. Mr. Brown explained the process of arriving at
4 the Record of Decision and gave a background of EPA's
5 involvement in East Helena.)

6 (The floor was opened up for public comment at
7 7:05 p.m.)

8 MR. BROWN: Who would like -- I'll get the list,
9 and whoever signed up first gets to talk first.

10 MR. BOURNS: Hi, my name is Tom Bourns. I'm
11 actually a resident of Helena, but I'm a concerned citizen
12 and a very good friend of one of your neighbors,
13 Sally Nyland. I have a little bit of background in the
14 sciences and in soil sampling and so forth, so Sally
15 assumed that I was an instant expert and has asked me if I
16 could help her with some of the information that is being
17 put out here. It looks like a lot of data has been
18 collected and a lot of analyses have been conducted on
19 that data, and I'm trying to help her make some sense of
20 it.

21 But some questions arise as I look through this. I
22 guess the first question is -- and I just picked up on
23 this this evening -- regarding the minimum levels that
24 are, that it's been decided trigger the remediation.
25 There seems to be some controversy between the State and

1 the EPA on this issue. The State is suggesting, according
2 to this newspaper article, a level of 500, and the State
3 (sic) 1,000. I'm wondering if any of the state
4 representatives are here, specifically Daryl Reed.

5 I guess if I can just make one more comment on that
6 subject. I believe that it wasn't perhaps so much a
7 discussion about the levels that are being defined as a
8 result of this study, but perhaps down the road, what
9 happens if subsequent analyses indicate that, woops, it
10 should have been 500 ppm; what do we do now, since the
11 vehicle for remediating the problem has long since left?
12 That was what I got out of this article. But I wonder if
13 you could expound on that comment a little bit, your
14 500 level versus the -- and the EPA's 1,000 level. Is
15 that a...

16 Am I correct in saying that it had more to do with the
17 time element; if we don't take care of it now, what are we
18 going to do down the line if it becomes an issue? Would
19 that be a correct paraphrasing your position on that?

20 MR. REED: Well, I'm not sure about whether I
21 should be answering in a public hearing or not.

22 MR. WARDELL: Could I make a suggestion? I'm
23 from the EPA. I would prefer that you ask the question at
24 the end of the meeting but before everyone leaves. You're
25 certainly welcome to sit down, and that will give him an

1 opportunity to sit with you one-on-one and have a
2 dialogue.

3 MR. BOURNS: I accept that. And actually, it
4 just came up, and it proceeds to my next point, and that
5 has to do with my concerns over the quality of the data
6 that were put into the system for the evaluation process.
7 I'm convinced that you guys did a lot of work to draw the
8 proper conclusions, but ASARCO, as I understand from this
9 presentation, did the primary work. They may have hired
10 the consultants, but the work and the soil sampling was
11 collected by ASARCO or their representative and not by the
12 EPA; is that correct?

13 MR. BROWN: Not entirely. We have sampled some
14 percentage of the properties ourselves, and we provide
15 oversight on practically a daily basis.

16 MR. WARDELL: Again, I'd ask that you ask those
17 questions -- Scott will be here, as well, and we're happy
18 to talk about what we've done in that regard.

19 MR. BOURNS: Okay. I would probably want to
20 pursue that. But let me get down to the nuts of my issue,
21 because there's other people here that want to submit a
22 comment.

23 I'm struck by this rather interesting summary map that
24 shows a picture of the town. And it shows two -- two
25 concentric circles. One is the likelihood of the soil

1 levels to be in excess of 1,000 ppm, that's the red line
2 here (indicating), and the yellow line being the
3 500 threshold. And I have kind of taken the liberty to
4 dash an intermediate line in between the centroid of this
5 ellipse and the -- and the 1,000 level. And I see that
6 most of the contamination is proximal to the smelter and
7 probably asymmetric with respect to the wind direction, so
8 it extends from the smelter in kind of a west-northwest --
9 or east-northeasterly direction.

10 But because I'm trying to work with Sally to explain
11 some of the issues here, one of the questions that arises
12 is that Sally's residence is virtually in the center of
13 this bullseye (indicating), and none of her sample
14 values -- And this will extend to some of the others of
15 you that are here this evening, because you're interested
16 to find out whether your yard is going to get cleaned up
17 or not. But none of her sample levels have exceeded the
18 500 -- or the 1,000 ppm threshold, whereas neighbors on
19 all sides of her obviously have had their yards replaced.

20 So the fallout from this smelter was rather selective,
21 it would appear. But that's not the case. The fallout
22 from these smelters is probably going to be ubiquitous,
23 and it's going to be concentrated in some central area and
24 then it's going to diffuse laterally from that.

25 So I call into question the validity of the actual

1 data that was collected, possibly as a result of sample
2 error or sample procedures -- maybe different samplers did
3 it different ways -- or perhaps analytical error. This is
4 a common problem that could arise. And this may be as
5 good an answer as any to the reason that Sally's lead
6 values are lower than all of her neighbors, it may have
7 something to do with the actual sample error.

8 So the question that arises from that is, what can we
9 do about this? Is there any recourse that Sally has for
10 resampling of her property or bringing in a qualified
11 expert that's acceptable by the EPA or the administrators
12 of this plan to -- to double-check these values? And for
13 that matter, do any of you others have that opportunity to
14 resample your property, just in case there is some kind of
15 sampling procedure problems involved with this? If,
16 having done that, the results show that, indeed, these
17 soils are contaminated, would the EPA then consider -- or
18 whoever the watchdog is for this then consider that
19 property eligible for cleanup?

20 That's my questions, and I think those are concerns
21 that are shared by others in this room. But I would like
22 to see if we could arrive at some answers for those
23 questions.

24 Thank you.

25 MR. BROWN: Thank you.

1 sally, did you wish to make a statement.

2 MS. NYLAND: (Indicating negatively.)

3 MR. BROWN: Chris Anderson.

4 You know what, I need to be more careful with this.
5 We said we were going to hear public comments first.

6 MR. ANDERSON: It is a public comment. I'm not a
7 city official. I was last time. I'm a resident. I've
8 been a resident for resident for 33 years. My name is
9 Chris Anderson. All my kids were born in East Helena and
10 raised in East Helena; and they're gone now, of course,
11 moved on.

12 I'd like to show my support for the Record of Decision
13 and the two-year plan. Now, I'm giving my support behind
14 that as a resident of East Helena. And I'd also like to
15 say that I believe that if you expand this cleanup over a
16 period of years, that you're going to create more harm to
17 our children through the fact that all the remediation
18 work going on at the sites, the heavy equipment work is
19 more dangerous to the children at this point in time than
20 the residual lead that's still around. And the residual
21 lead is going to be addressed in the plan through --
22 through your monitoring the blood levels and everything,
23 through the Health Department's lead program.

24 And secondly, I think it's pretty important to move on
25 so that we can free up the agencies that deal with

1 environmental pollution so that they can move on from here
2 and move to areas within the county, within the state that
3 also have pollution problems. And I would hate to think
4 that they're tied up here, hanging here just simply
5 because ASARCO happens to have deep pockets. And that's
6 really what I believe the reason is. And further than
7 that, go on past that, I would like to say that EPA being
8 the parent agency, I think your children are misbehaving
9 and they need to be spanked and they need to have their
10 allowance taken away from them. So don't spare the ROD.
11 That's all I have to say.

12 MR. BROWN: Thank you, Mr. Anderson.

13 Mr. Schnittgen.

14 MR. SCHNITTGEN: Good evening. I've been in
15 contact with Mr. Brown some. My wife and I moved into
16 Eastgate about three-and-a-half years ago, and we just had
17 a baby this fall. We live downwind from most of the dirt
18 roads that are in the East Helena area, it seems like, and
19 in the summer, our house is in a cloud dust. And with
20 some of the airborne lead pollution subjects here, I'm
21 really worried about that dust posing a hazard to our
22 daughter, and even to us, because in the summer, there's a
23 dust cloud; there's no wind, we live in a dust cloud. And
24 that's one of my major concerns: Is there anything as far
25 as being able to find ways to control that dust or maybe

1 pave the roads or use some dust abatement techniques to
2 keep that dust control down?

3 And also, there's a ditch that runs along the western
4 edge of our property, and that, too, there's a lot of kids
5 in our neighborhood that love to go play in there, and I'm
6 sure there's a hazard to them. Because when the water
7 drains off the soil -- and our ditch doesn't exactly flow
8 fast -- I'm sure there is a lot of sedimentation. And I'm
9 worried about that being a hot spot, as well. And also,
10 we live on the edge of park land, and I'm not sure what
11 kind of testing, if any, was done in that.

12 So those are my main concerns. Anyway, that's what I
13 have for comments for now.

14 MR. BROWN: Thank you, Mr. Schnittgen.

15 Mr. Lindberg, are you here as a citizen of
16 East Helena?

17 MR. Lindberg: I just signed up. I don't need to
18 comment.

19 MR. BROWN: Is anyone else here as a citizen of
20 East Helena?

21 Mr. Stipich.

22 MR. STIPICH: Thank you, Scott.

23 I am up here speaking as a citizen of East Helena. I
24 have lived here all my life. And what I want to say is
25 that I have feelings and care for children and want them

1 to have their health and everything, but I believe that
2 EPA, at this time, their findings and that -- and there's
3 no emissions from ASARCO anymore, which I hated to see
4 go -- that I think that it should stay at 1,000 parts per
5 million. I agree that there should be testing and
6 everything on the children in the future, but I think we
7 should put an end to the cleanup in East Helena and let
8 the people get back to their normal lives.

9 Thank you very much.

10 MR. BROWN: Thank you, Mr. Stipich.

11 I see no more residents of the East Helena area, but
12 if there is another person would who like speak at this
13 time. And may I again remind you that if you want to
14 submit written comments, by all means, do so. And those
15 of you who have already given oral comments, you're free
16 to send us written comments, as well. I encourage that.

17 If there are no more citizens, then --

18 Mike, were you going to make a statement?

19 UNIDENTIFIED SPEAKER: Not at this time.

20 MR. BROWN: Then shall we go to Mayor
21 Terrie Casey on behalf of the East Helena City Commission.

22 MAYOR CASEY: Hi. I feel like I did this just a
23 couple weeks ago.

24 I've said before that I think everyone, the city, the
25 county, the state, and the EPA, all agree that the

1 important thing here is the health of the kids. And I
2 think the blood lead levels and their improvement over
3 this period of time show that we're doing great. We're
4 better than the national average.

5 At the last meeting in January, the doctors from EPA,
6 with their presentation, basically said that there could
7 be no expected improvement in the blood lead levels; even
8 if we do make the change that DEQ is requesting, that
9 there will be no improvement. So the point would be, if
10 you can't make it any better by lowering that standard,
11 that number, making it more stringent, what's the point?
12 I think at this time, we have the county lead education
13 office; they do a great job. I give them a lot of credit
14 for the improvement in our blood lead levels. And I think
15 with them in place, I just don't see any need for this to
16 continue on.

17 We need to get on with things. Once we come out from
18 underneath that Superfund status, and with the closure of
19 ASARCO, this area is going eligible for Brownfields
20 grants. And that's not a primary focus, but it is
21 something to look forward to. There could be some more
22 improvement in this area. And if we can't improve the
23 health of the kids and the community health-wise, we may
24 as well try and move on and get on to a new future. This
25 one is gone, it's time to move on.

1 Thanks for your time.

2 MR. BROWN: Thank you, Mayor Casey.

3 Is there anyone else representing the City of East
4 Helena who would like to speak?

5 (No response.)

6 MR. BROWN: Let's move on to the County, then.
7 Melanie Reynolds.

8 MS. REYNOLDS: Hi, my name is Melanie Reynolds,
9 and I'm the county health officer. I'm here representing
10 the Lewis and Clark City-County Health Department and the
11 Lewis and Clark City-County Board of Health. I'd like to
12 take this opportunity to make some comments on the
13 Proposed Plan for Final Cleanup of East Helena's
14 Residential Soils and Undeveloped Lands.

15 The mission of the Lewis and Clark City-County Health
16 Department is to promote and protect the health of all
17 county residents. The City-County Health Department
18 administers, as has been mentioned earlier, the
19 East Helena Lead Education and Abatement Program and has
20 worked with the East Helena community, EPA, and DEQ since
21 1996. During this time, we have provided education to
22 East Helena residents about living around lead. During
23 this time, we have provided education to East Helena
24 residents, and we have -- and overall, the purpose of the
25 East Helena Lead Education and Abatement Program is to

1 prevent and reduce elevated blood levels in children, and
2 we assist in these efforts in several ways. One is we
3 coordinate blood lead screenings; we provide education to
4 at-risk groups; and we conduct voluntary environmental
5 assessments in folks' homes, as we've discussed earlier.

6 we're really pleased with the working relationship
7 that we have with the community and both agencies. We
8 also acknowledge that the work we do will be changing
9 considerably in East Helena moving into the development of
10 a Record of Decision or ROD. The primary change for the
11 Health Department and the Board of Health is that we
12 become responsible for implementation and management of
13 institutional controls. We would be doing that with other
14 folks, as well, after major cleanup activities have been
15 completed.

16 As most of you are probably aware, institutional
17 controls are the mechanisms or programs which ensure that
18 the past efforts to abate lead are continued and that all
19 citizens, current and future, are protected from the lead
20 and other contaminants that remain in the East Helena
21 environment. It would be irresponsible to have invested
22 so much time and money, as has been described today, in a
23 cleanup only to walk away and leave it.

24 EPA requires that after a cleanup is completed, a
25 local government agency must step in and protect the

1 results or remedy. That is where we come in. Since
2 institutional controls are an integral part of the Record
3 of Decision, and since the Proposed Plan is the starting
4 point for the ROD, we feel our responsibility includes a
5 thorough review of the plan from a public health
6 perspective. Board of Health members and staff have been
7 reading the plan, discussing it at Board of Health
8 meetings and informational sessions. And a special thank
9 you to EPA, DEQ, and the East Helena City Council with
10 Mayor Casey coming and doing a very informative
11 presentation to the Board of Health.

12 Among the Board of Health's focal points are verifying
13 the process and epidemiological systems that have been
14 used for selecting alternatives in the plan, understanding
15 the modeling and the data used to support different
16 interpretations, and considering the ongoing process for
17 developing and implementing effective long-term
18 institutional controls. Since the health of the public in
19 Lewis and Clark County is our specific purview, we feel an
20 obligation to understand which data was used and why and
21 carefully consider the implications of the proposed plan.

22 In summary, as the Board of Health and Health
23 Department analyze the information available to us about
24 the modeling and the data used in it, and the structure
25 and function of the institutional controls, we can

1 determine which, if any, of the proposed alternatives
2 might best serve the interest of public health in
3 East Helena.

4 Thanks again for the opportunity to provide the
5 comments. And I did make some extras copies, if anybody
6 is interested. Thank you.

7 MR. BROWN: Thank you, Ms. Reynolds.

8 Did Mr. Martinka wish to make a statement?

9 (No response.)

10 MR. BROWN: Those are all of the people who have
11 an asterisk by their name. If anyone wishes to stand up
12 and speak, you're certainly welcome to do so.

13 If not, I want to thank you again for coming.

14 John, is there anything that you would like to add?

15 MR. WARDELL: Again, echoing Scott's comments,
16 thank you for coming. I know there are some folks that
17 wanted to talk about the State and the EPA, and we're
18 happy to stay as long as necessary to sit down and talk
19 with you one-on-one. So we welcome that opportunity, and
20 thank you very much.

21 (The proceedings were concluded at 7:30 p.m.)

22 * * * * *

COURT REPORTER'S CERTIFICATE

STATE OF MONTANA)
) ss.
COUNTY OF LEWIS AND CLARK)

I, CHERYL ROMSA, Court Reporter, Notary Public in
and for the County of Lewis and Clark, State of Montana,
do hereby certify:

That the foregoing proceedings were reported by me in shorthand and later transcribed into typewriting; and that the -16- pages contain a true record of the proceedings to the best of my ability.

IN WITNESS WHEREOF, I have hereunto set my hand
and affixed my notarial seal this 12th day of March 2007.

CHERYL A. ROMSA
Court Reporter - Notary Public
My Commission Expires 8/4/2007

PUBLIC COMMENTS ON PROPOSED PLAN



**SUMMARY OF PUBLIC COMMENTS AND EPA RESPONSES
REGARDING THE PROPOSED PLAN FOR FINAL CLEANUP OF
EAST HELENA'S RESIDENTIAL SOILS AND UNDEVELOPED LANDS**
East Helena Superfund Site (Operable Unit No. 2), Lewis and Clark County,
MT

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References (Note to Scott: References are not attached in this working draft)

Attachment: Lewis & Clark City-County Board of Health Draft Regulations

Attachment: ATSDR Health Consultation

Appendix: Public Comments

Note to Scott: The sequence of the attachments may need to be revised

*To go directly to a topic, place your cursor over the heading of your choice, then press "control"
and "click" your mouse simultaneously.*



**SUMMARY OF PUBLIC COMMENTS AND EPA RESPONSES
REGARDING THE PROPOSED PLAN FOR FINAL CLEANUP OF
EAST HELENA'S RESIDENTIAL SOILS AND UNDEVELOPED LANDS**
East Helena Superfund Site (Operable Unt No. 2), Lewis and Clark County,
MT

Commenters on the Proposed Plan included the City of East Helena, the Lewis & Clark City-County, Montana Department of Environmental Quality, Montana Department of Public Health and Human Services, Asarco, and local citizens. The original submitted comments are included as an appendix to this section of the Responsiveness Summary.

In reviewing the comments and considering responses to those comments, it became apparent that numerous comments were similar, and that comments were focused on a relatively limited number of topics. In addition, it was recognized that the comments required comprehensive responses. Rather than respond to each comment individually (which would have resulted in repetitive responses), or respond by referring back to the first comment /response on a particular topic (which would have resulted in undue emphasis on that first comment or response), comments were grouped into the subjects shown in the Table of Contents. However, many of these subjects are interrelated and readers are urged to review the Responsiveness Summary in its entirety. In addition, in a very limited number of cases a comment which seemed best suited to more than one category was included in all appropriate categories.

For ease of reading, the comments received are presented in normal text and EPA's responses are in italics.

I. CHILDREN'S BLOOD LEAD TEST RESULTS

COMMENTS

- **Ron Whitmoyer, Superintendent - Blood Lead Data Support Moving Forward - East Helena Public Schools,**

The concerns that I have regarding this ROD are more about making an educated decision than any other point. The City of East Helena deserves to have this process move forward. The data supports the recommendation of the EPA scientists, not the feeling of the opponents of the ROD. Since individuals felt that there was not enough data I decided to look into the matter myself and requested and received the 2006 lead data comparisons with the lead concentrations in the soil of their residence and graphed them. That data is attached. ... Since not a single child in East Helena has had a blood level over 10 in the last 7 years, I would be hesitant to conclude that the IEUBK model accurately picks a protective level for our town. Further the average blood lead level of all sampled children in 2006 was 1.3 ug/dl when the national average was 1.7 ug/dl.

The IEUBK is an extremely close match to the 1993 Hydrometrics Inc. data when graphed with a third data point, the airborne lead particulates. When the air becomes a pathway for

ingestion of lead you can clearly see that between 1.5 and 2.5 micrograms of lead dust in a cubic meter of air nearly matches the IEUBK model. My concern is that East Helena has tested hundreds of children and has data to prove that the IEUBK model is not an accurate depiction of the real information we have about East Helena lead pathways. Please consider these details in making a decision regarding approving the ROD. This decision has many far reaching effects on the community that include the economic viability of the town as well as the health of its residents.

Certainly the protection of the residents and the children are paramount, but let's not build a vehicle that has child seat restraints, helmets, pillows and already deployed air bags when making a Record of Decision.

- **Ed Stipich, East Helena Councilman and Lewis and Clark County Board of Health Representative – “Bring Closure to the Cleanup”**

Since its inception I have been involved in the East Helena Superfund Cleanup. Back then I was mayor of East Helena and I have always had the health and well-being of our citizens at heart. I have not always agreed with the EPA's politics and methods during the clean-up, but after all these years I do agree that it is time to bring the clean-up to an end. As experts have repeatedly stated, it has been a success. Blood lead level studies show that children in the East Helena area have lower blood lead levels than the national average. ASARCO is closed now, and there are no longer any concerns about the toxic emission. Yards have been replaced. Is the country willing to replace yards again, when expert doctors from the EPA have asserted this action would not improve blood lead levels in our children and at what costs?

I say enough is enough. The City of East Helena has been in financial and economic limbo without the ability to expand business, and enlarge our tax base. It is time to bring closure to the cleanup, so we can move forward, allow economic development and ease the burden on our citizens.

- **Terrie Casey, Mayor of East Helena, Montana on behalf of the East Helena City Commission - Blood Lead Levels Better than National Average; No Need to Continue**

I've said before that I think everyone, the City, the County, the State and the EPA; all agree that the important thing here is the health of the kids. And I think the blood lead levels and their improvement over this period of time show that we're doing great. We're better than the national average.

At the last meeting in January, the doctors from EPA, with their presentation, basically said that there could not be expected improvement in the blood lead levels; even if we do make the change that DEQ is requesting, that there will be no improvement. So the point would be, if you can't make it any better by lowering that standard, that number, making it more stringent, what's the point? I think at this time, we have the county lead education office; they do a great job. I give them a lot of credit for the improvement in our blood lead levels. And I think with them in place, I just don't see any need for this to continue on.

- **Lewis & Clark City-County Board of Health - “Blood lead studies are not true epidemiological studies”**

MPPHE says Pb should continue

Furthermore, although the lead studies appear to be representative both spatially and based on lead concentrations the blood-lead studies are not true epidemiological studies that incorporate several additional factors, such as socioeconomic and education level of the parents.

- **Montana Department of Environmental Quality – “Blood lead data does [sic] not document protectiveness”**

The proposed plan asserts that Alternatives 2R and 3R are “by all known measures” equivalent in terms of overall protection. EPA bases this assertion on the recent blood lead monitoring. However, the blood lead monitoring does not document this protectiveness. Nor is EPA's basis supported by the EPA Superfund Lead-Contaminated Residential Sites Handbook (Lead Sites Handbook August 2003) that states “blood lead studies ... should not be used for establishing long-term remedial ... cleanup at lead sites.” In addition, the past blood lead monitoring can not be used as a measure of future protectiveness. The recent (past 10 years) participation in the blood lead monitoring program is not representative with participation of only 25-50% of self-selected individuals. More importantly, the blood lead monitoring results may have also been influenced by awareness and the education efforts and thus blood levels are likely lower than if the current education effort was not effective.

- **Lewis & Clark City-County Board of Health – “The BOH does not agree that the data from the blood lead studies should be used in establishing the lead cleanup level”**

Although not clearly described in the Proposed Plan, the BOH understands (through correspondence and discussions with EPA) the lead cleanup level was determined based on the blood lead data from East Helena and a quantitative uncertainty analysis using EPA's Integrated Exposure Uptake (IEUBK) Model.

First, the BOH does not agree that the data from the blood lead studies should be used in establishing the lead cleanup level. EPA guidance indicates, “The Office of Solid Waste and Emergency Response (OSWER) recommends that blood-lead studies not be used to determine future long-term risk where exposure conditions are expected to change over time; rather, they be considered a snapshot of ongoing exposure under a specific set of circumstances (including community awareness and education) at a specific time” USEPA, 2006a). It is the opinion of the BOH that several factors are likely contributing to the measured blood lead levels in East Helena and do not represent the future, potential health risks to soil and dust exposures. Factors that may be affecting the blood lead studies include, but are not limited to, community awareness education, evaluation of a non-random, convenience sample (i.e., voluntary participation), the cleanup of several residential yards in East Helena since 1991, the cessation of smelter emissions, and the discontinuation of leaded gasoline.

- **Moriah Bucy – “Blood lead studies should not be used for cleanup levels”**

The statement in the proposed plan that “the model derived predictions are but one aspect, of several equal or more important aspects, that were considered...” is interesting. It appears that the “more important” aspects that were considered are the blood lead studies conducted on children in the East Helena area. The EPA Superfund Lead-Contaminated Sites Handbook (August 2003) states that blood lead studies should not be used for cleanup levels. However, it appears that EPA is giving these studies (which are conducted on a completely voluntary

Self selection?
Lead Ed Prog. is part of remedial
can be checked
at 5yr review

Blood Pb study will show if there's a problem

Discussion says essentially the ends justified the means. Would we say more about process

basis by people who choose to bring their children in to be tested, and are therefore not representative of the population of the area) more importance than the lead model, which is used across the nation to calculate risk-based cleanup levels.

under
taken

EPA RESPONSE TO COMMENTS PERTAINING TO THE USE OF BLOOD LEAD DATA

exp
fronts

^{along w/}
EPA agrees that the blood lead level data support the conclusions of its scientists and agrees that the cleanup to date, ~~and~~ other programs and efforts to reduce lead in the environment, have been a clear success. EPA also agrees with the desire to conclude the cleanup based on the residential cleanup levels identified in the Preferred Alternative. The following category, Category II, National Guidance For Lead Sites And East Helena's Role In Its Development, addresses guidance-related comments.

The East Helena success story is best reflected in the steady decline in East Helena children's blood lead levels over time as shown in Table I-1 and Figure I-1. The data show a substantial decline in blood lead levels from 1975 through the early 1990s, and continued declines to the present. Table I-1 and Figure I-1 show statistics for more than 1,500 child blood lead level tests between 1975 and 2007. The trend stands out, but more importantly the data demonstrate that by 1994-1995 national goals had already been achieved, and of more than 700 children tested after air quality standards were met (1999-2000), approximately 97% tested at or below 4 ug/dl.

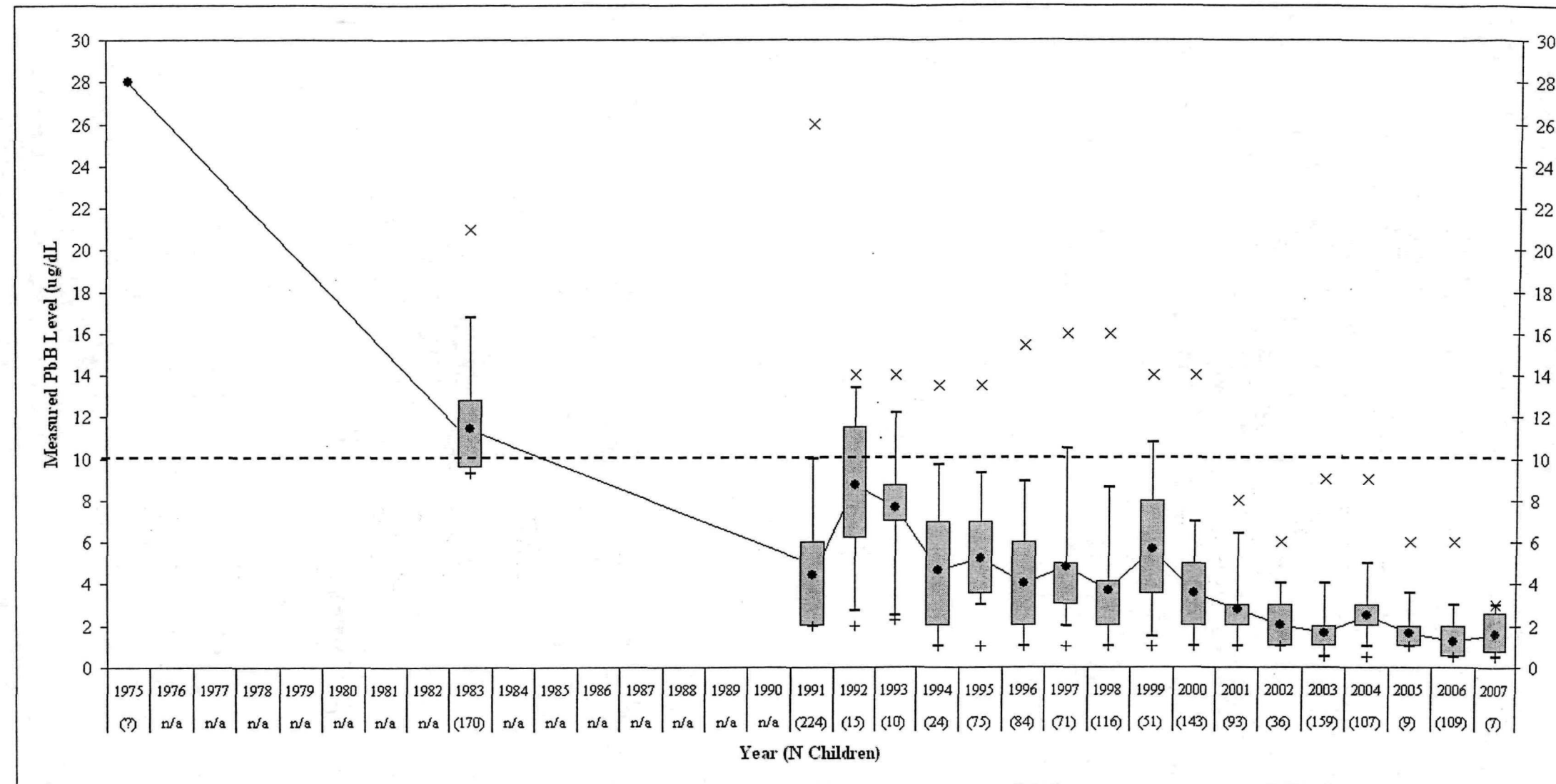
The remedial action goals for East Helena include the following statement: No child should exhibit a blood lead level greater than 10 ug/dl and at least 95% of children should remain at or below 4 ug/dl. This goal was first achieved in 2001, it continues to be met or exceeded, and it surpasses the national goal for blood lead levels based on applications and predictions of the mathematical model. Should this more stringent, site-specific goal for East Helena fail to be met in the future, for any reason, there are procedures in place or proposed in the Record of Decision (ROD) to reexamine all relevant aspects of the remedy, including the soil cleanup action level.

East Helena children's blood-lead levels are significantly lower in recent years as compared to levels observed prior to the 1990s. Since 2001, there has been no child, of 520 children tested, with a blood lead value that exceeded 10 ug/dl. Moreover, at least 95% of children tested since 2001 were at 4 ug/dl or below. The average of blood lead levels in East Helena and the surrounding community have been 2 ug/dl or less for the last five years, and have been at or less than the national average of 1.7 ug/dl since 2005.

**Table I -1. Blood Lead Levels of East Helena Children
0 to 84 Months of Age (1975-2007)**

| Year | No. of children tested | No. with blood lead levels of 10 µg/dl or greater | Average blood lead level (µg/dl) |
|------------------------------------------------------------------------------------------------|------------------------|---------------------------------------------------|----------------------------------|
| 1975 | (?) | (all) | 28 |
| 1983 | 170 ^a | 77 | 11.5 |
| 1991-92 | 239 | 16 | 4.7 |
| 1993-94 | 34 | 2 | 5.5 |
| 1995-96 | 159 | 2 | 4.6 |
| 1997-98 | 187 | 7 | 4.1 |
| 1999-00 | 194 | 5 | 4.1 |
| 2001-02 | 129 | 0 | 2.6 |
| 2003-04 | 266 | 0 | 2.0 |
| 2005 | 9 | 0 | 1.7 |
| 2006 | 109 | 0 | 1.3 |
| 2007 | 7 | 0 | 1.6 |
| ^a Ninety-eight children residing within 1 mile of the smelter. ? = not available | | | |

Figure I - 1. Blood Lead Values for Children (0 to ≤ 84 Months) in East Helena from 1975 to 2007

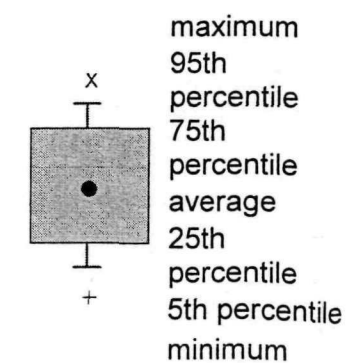


Restricted to children in East Helena aged 0-84 months (at the time of PbB collection).

PbB values reported as <1 ug/dL evaluated at 0.5 ug/dL.

If multiple PbB samples are available for a child within a year, the mean PbB value across samples was used.

n/a = no data available



Efforts to control fugitive particulate emissions
from the smelter likely contributed to the decline
... as did national programs

The overall success of lowering East Helena children's blood lead levels is due to a number of reasons. Even before the majority of the soil removal actions had occurred and before the East Helena Lead Education and Abatement Program was started in 1995 there were substantial declines in the blood lead levels of children. The decline prior to the early 1990s is likely associated with the efforts to control fugitive particulates from the smelter property and from national programs to reduce lead in the environment.

The reduction in blood lead levels since the early 1990s is thought to be due to the combined effect of multiple actions, including the reduction and elimination of the fine particulate pathway (including both dust ingestion and inhalation), soil removal, and national programs to reduce lead in air, water and food. EPA agrees with the comment that multiple factors affect children's blood lead levels. The air pathway, for example, was found to be a significantly more important contributor to children's blood lead levels than the soil pathway.

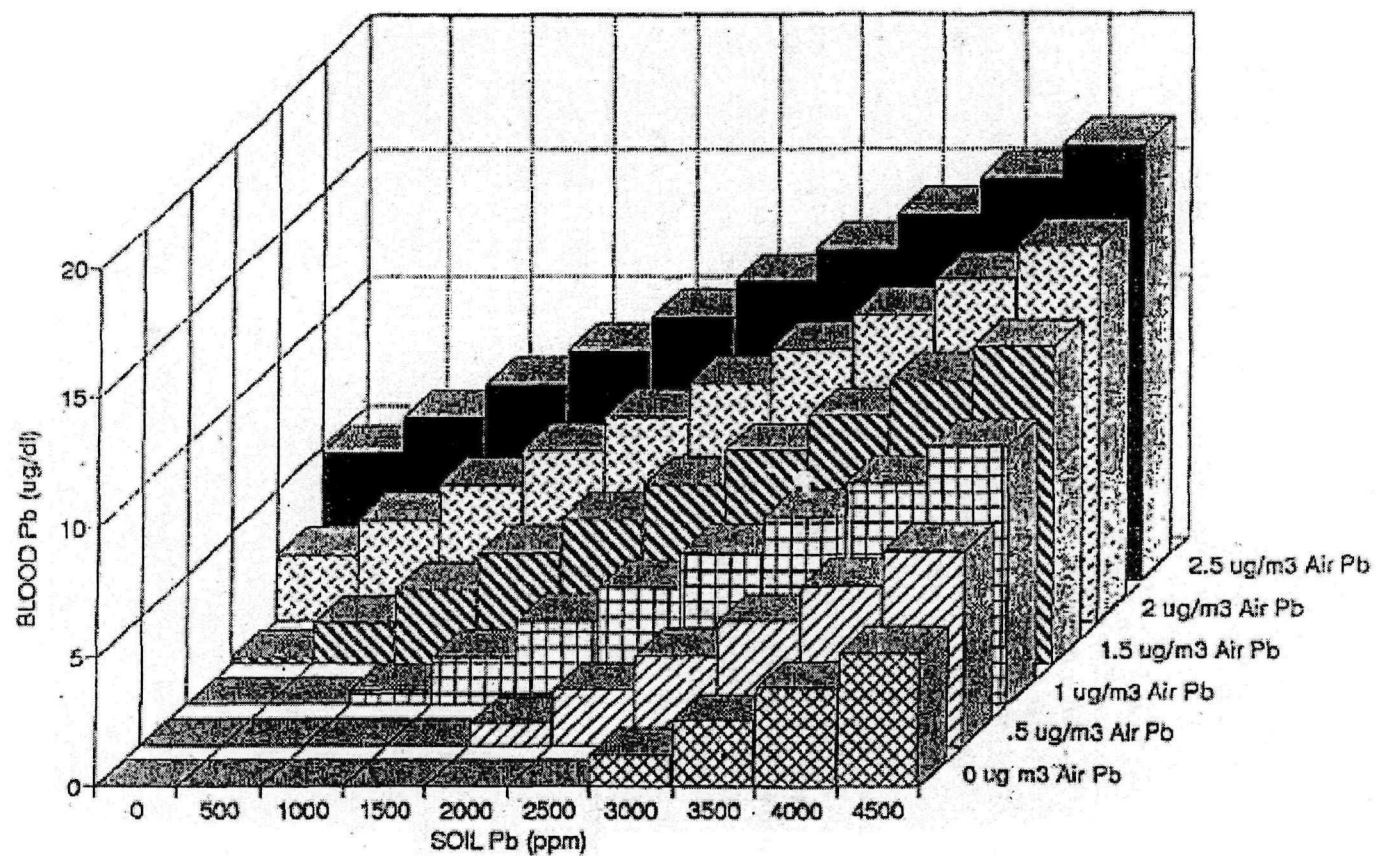
← sounds like a highway name

inhalation pathway

The first indication of the significance of the airborne lead fine particulate pathway to elevated blood lead levels, was exhibited in an evaluation of co-located sets of blood lead, soil lead, and air lead data reported on in 1993. Consideration of the 1983 through 1991 air data, and the mean blood lead level data for 1983 and 1991, in addition to the soil lead data, showed that the child blood lead data were correlated more to air lead than to soil lead. Figure I-2 shows the relationship between soil, air, and blood lead levels based on a comparison of the 1983 data to the 1991 data. The figure clearly shows the importance of airborne lead particulate as a contributor to blood lead, as well as the contribution of soil lead at higher concentrations to blood lead levels.

co-located sets of data?

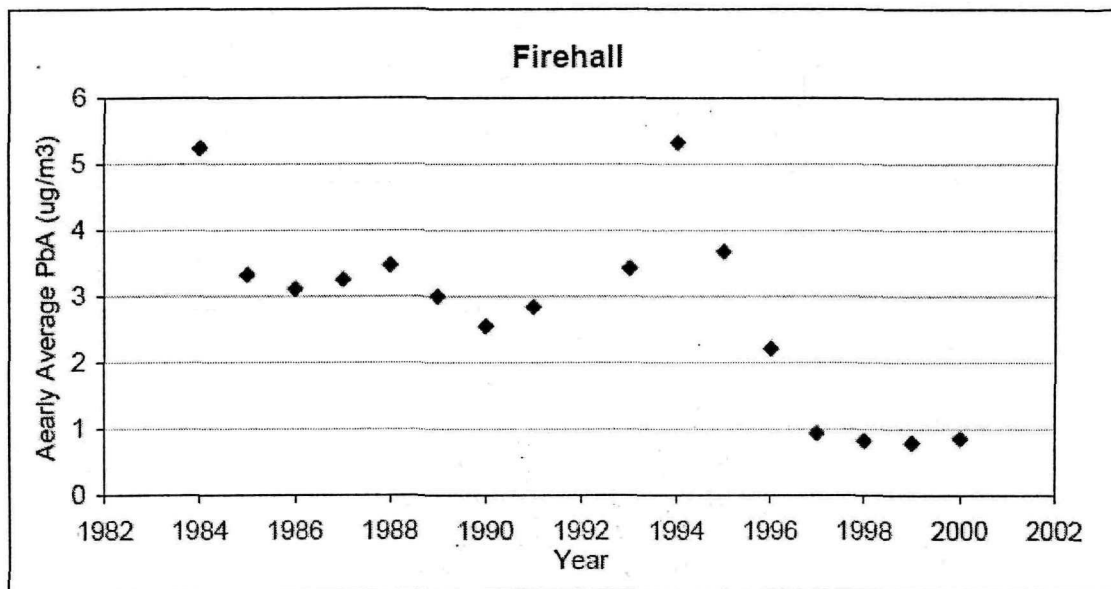
Figure I-2. 1991 Results from Matched Pairs of Air Lead, Soil Lead, and Blood Lead



Source: East Helena, Montana. Soil, Blood, and Air Lead Data Evaluation, Hydrometrics, Inc. 1993

ing

With respect to the relationship between the fine particulate pathway and children's blood lead levels, several points are worthy of being emphasized. Construction was completed in 1989 on a totally enclosed ore and concentrates storage and handling building. In the 1990s, emission controls for the acid dust handling and conveying system, the gross plant ventilation system, blast furnace ventilation system, and the sinter building ventilation system were upgraded. And, in 1998 – 1999, the smelter achieved the National Ambient Air Quality Standard for lead of 1.5 ug/m³. These changes significantly reduced emissions of fine particulates from the smelter, as reflected in the air data for the Firehall station, which is immediately downgradient from the smelter property.



NOTE: y axis has Yearly misspelled

One commenter mentioned the effect of the Asarco shutdown on emissions in the context of blood lead levels. EPA agrees that the shutdown appears to have had a positive effect with respect to blood lead levels, and this is directly related to the understanding that the air lead fine particulate pathway had a more profound effect on blood lead levels than EPA initially realized. The fine particulates were the result of continuous smelter emissions and fugitive fine dust particulates, and reentrainment of those particulates within the community. The pathway contributed lead not only to yard soils, but also to household dust and street and alley dust.

Recent data support this understanding of the importance of the fine particulate pathway. Table I-2 shows the number and fraction of children with blood lead values above 4 ug/dL as a function of year. The table shows a dramatic decrease from 2000 to 2002 in the percentage of children with blood lead levels greater than 4 ug/dL. Prior to 2000, there were even greater percentages of children with blood lead levels greater than 4 ug/dL. The most singular event in this time period was the shutdown of the Asarco operations and smelter in 2001.

TABLE I-2. Fraction of Children Above 4 UG/DL by Year

| Year | No. of Children | PbB \leq 4 ug/dL | PbB > 4 ug/dL |
|------|-----------------|--------------------|---------------|
| 1991 | 224 | 63% | 37% |
| 1992 | 15 | 13% | 87% |
| 1993 | 10 | 20% | 80% |
| 1994 | 24 | 54% | 46% |
| 1995 | 75 | 49% | 51% |
| 1996 | 84 | 67% | 33% |
| 1997 | 71 | 63% | 37% |
| 1998 | 116 | 75% | 25% |
| 1999 | 51 | 35% | 65% |
| 2000 | 143 | 73% | 27% |
| 2001 | 93 | 86% | 14% |
| 2002 | 36 | 100% | 0% |
| 2003 | 159 | 97% | 3% |
| 2004 | 107 | 93% | 7% |
| 2005 | 9 | 100% | 0% |
| 2006 | 109 | 98% | 2% |
| 2007 | 7 | 100% | 0% |

The time period of the shutdown of the smelter (2001) also corresponds to the time period when the maximum blood lead values measured in the East Helena area dropped from 14 – 16 ug/dl to less than 10 ug/dl (see Figure I-1), and the number of children with blood lead levels greater than 10 ug/dl dropped to zero for the first time. There have been no children with blood lead levels greater than 10 ug/dl since that time (see Table I-1). Both the original source for the fine particulate pathway and the opportunity for smelter workers to inadvertently bring dust home ceased at this time.

The air monitoring data for lead in the East Helena area from 2001 showed that the air lead mean concentrations at the Prickly Pear station dropped from 1.02 ug/m³ in the first quarter to 0.08 ug/m³ in the second quarter, and they remained at that low level for the rest of the year. Thus, the decrease in the percentage of children with blood lead levels greater than 4 ug/dl also corresponds to a decrease in the air lead concentrations.

This association between the blood lead levels and the shutdown of the Asarco smelter with a concomitant decrease in air lead concentrations is fully consistent with an understanding of the importance of the historical airborne fine particulate pathway, including both dust ingestion and inhalation, with respect to blood lead levels in the East Helena area.

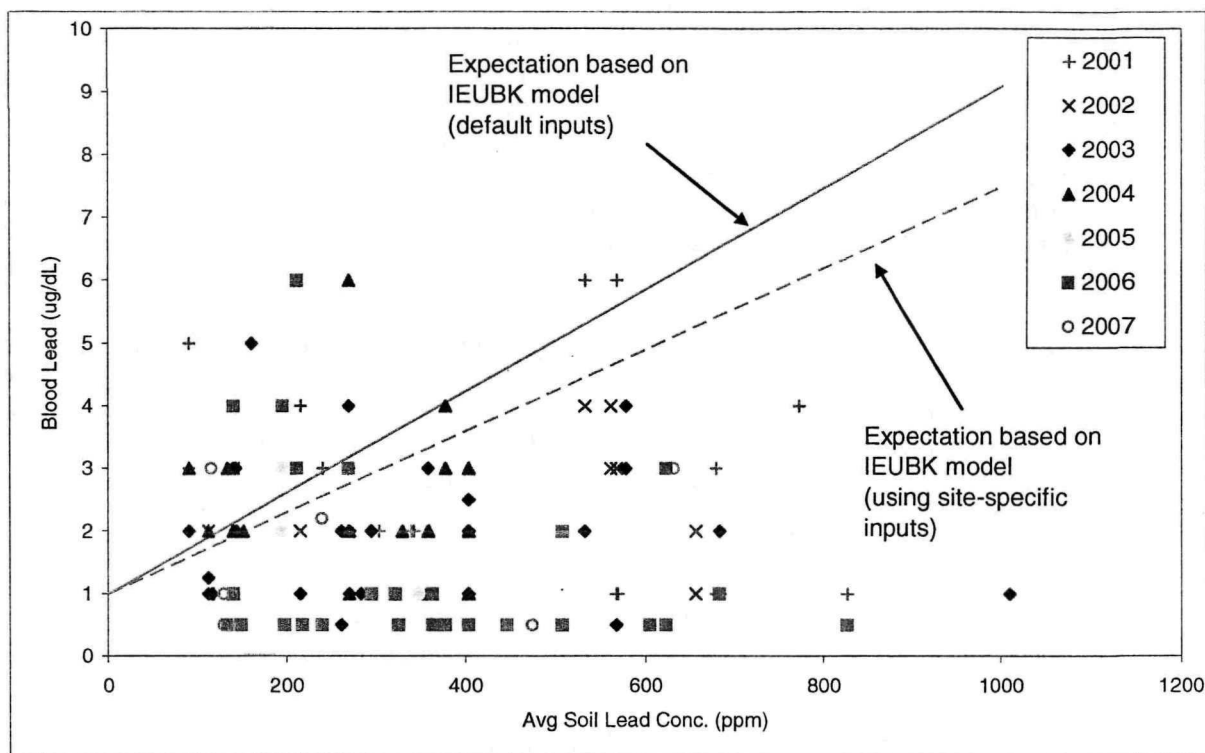
Multiple factors affect children's blood lead levels. The 1995 risk assessment noted that blood lead levels might have been influenced by factors such as the levels of lead in air and in paint, in addition to the levels of lead in soil. As previously discussed, the fine particulate pathway has had a significant effect at East Helena. In addition, it is not debated that, prior to the 1990s, street and alley dust, yard soils, and household dust – all arising from continuous smelter emissions and reentrainment of dust within the community -- were among the primary contributors to the elevated blood lead levels observed in East Helena children.

However, recent data from co-located pairs of blood lead and soil lead show that blood lead levels are not correlated to concentrations of soil lead remaining in East Helena yards. Figure I - 3 shows a plot of blood lead versus soil lead for each of several years. Summary statistics are presented below the figure. As seen, there is no clear tendency for blood lead to increase as soil lead increases, and the average slope (ug/dL in blood per 1,000 ppm of soil lead) across seven years of observation is not different from zero. Values much above 1,000 ppm are not available because there are no properties remaining at East Helena and the surrounding community with average concentrations of lead at this level. These more recent data demonstrate that a relationship between soil lead and blood lead levels no longer exists in East Helena. This may be contrasted with the predictions of the IEUBK model, which indicate an increase of approximately 6.5 to 8.1 ug/dL in blood lead per 1,000 ppm of soil lead.

The figure further demonstrates that, given the large number of coexisting soil lead and blood lead test results (131 data pairs) over an extended time, statistical confidence in these data is high and uncertainty low. These and other statistics strongly support the conclusion that the proposed soil cleanup action level is protective; however, they also refute the presumption that a lower cleanup action level may further reduce blood lead levels of East Helena's children.

This finding is also supported by the following box and whisker diagram, Figure I - 4, that depicts the relationship between blood lead levels in children and the remediation status of the residential properties where children were living. As seen, there is no measurable difference between children who live at properties that have been remediated with clean fill, and at properties where remediation has not occurred and average soil lead levels are either < 500 ppm, or are between 500 and 1,000 ppm. In addition, if maximum soil lead values are considered, there is no real difference between children who live at properties that have been remediated with clean fill and at properties where remediation had not occurred, even for a group of matched pairs with concentrations of soil lead above 1,000 ppm. As above, this indicates that, at this site, the contribution of soil lead < 1,000 ppm to blood lead is sufficiently small that the effect cannot be detected. These data also indicate that the level at which soil lead starts to have a distinguishable effect on blood lead level is greater than 1,000 ppm.

Figure I - 3. Relation Between Average Soil Lead and Blood Lead Values for Children (0 to 84 Months) at Unremediated Properties in East Helena, 2001- 2007



| Year | N | Intercept ug/dL | Slope ug/dL per 1000 |
|------|----|--------------------|-------------------------|
| 2001 | 18 | 3.1 | -0.70 |
| 2002 | 10 | 2.7 | 0.08 |
| 2003 | 37 | 1.9 | 0.01 |
| 2004 | 22 | 2.0 | 0.90 |
| 2005 | 4 | 4.4 | -9.82 |
| 2006 | 33 | 1.9 | -1.80 |
| 2007 | 7 | 1.2 | 1.44 |

Average slope (ug/dL per 1000 ppm)

All years -1.41

Excluding 2005 -0.01

IEUBK Predicted Slope (ug/dL per 1000 ppm)

All default inputs 8.10

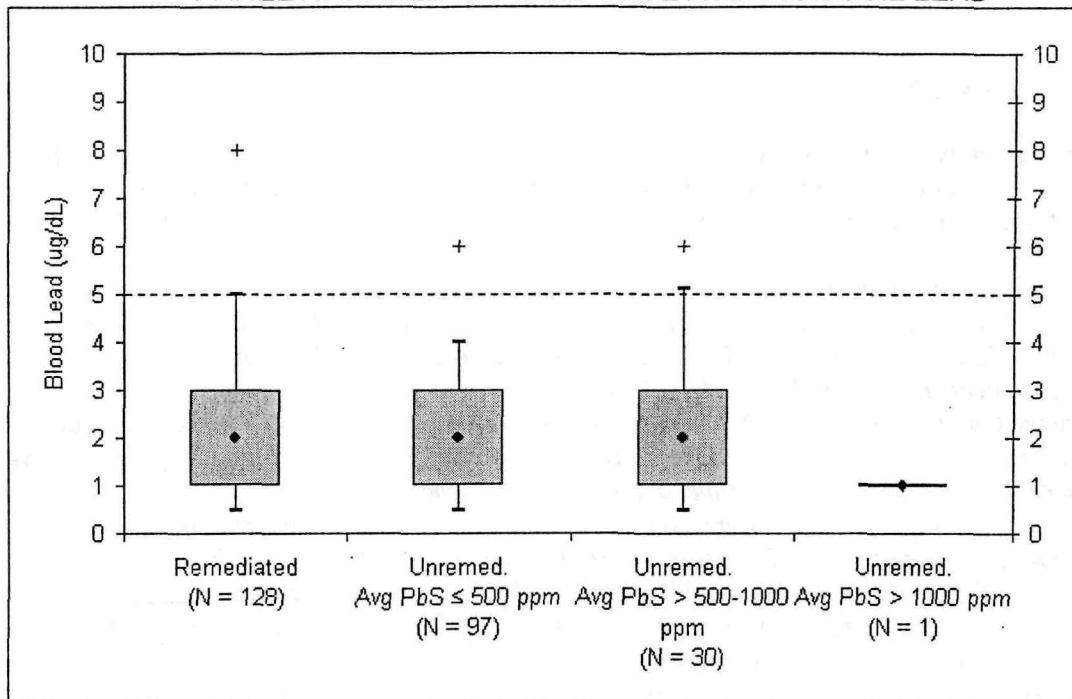
Site-specific inputs 6.50

NOTES:

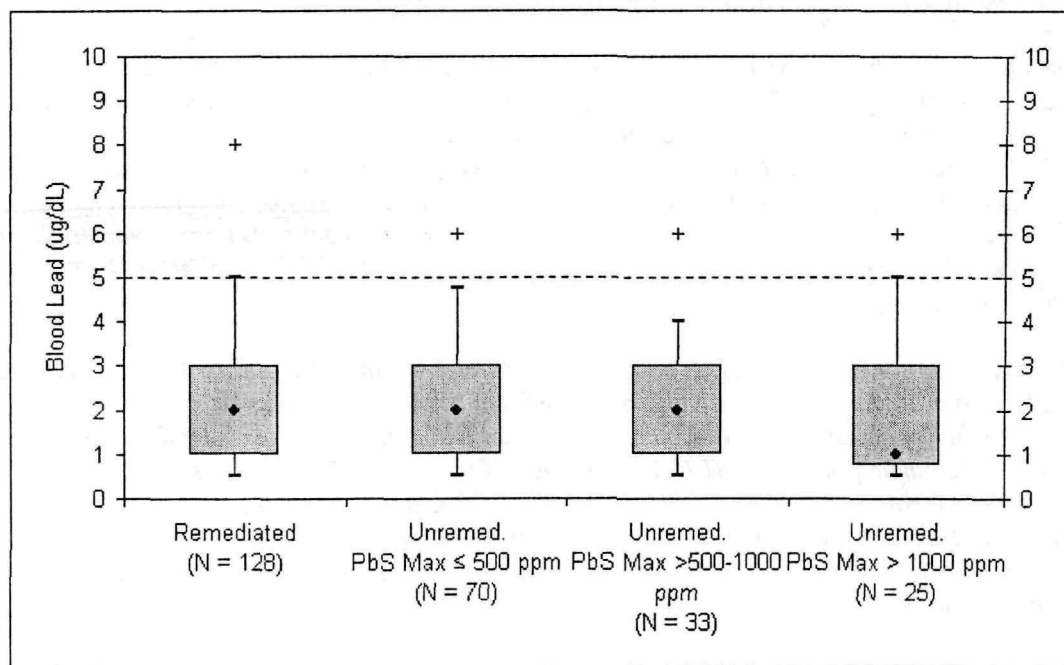
If lead in soil is a significant contributor to blood lead in children, then it is expected that a plot of blood lead vs soil lead will have an upward trend. Based on the IEUBL model, this trend should be about 6 to 8 ug/dL per 1000 ppm of lead in soil. Because of the trend toward decreasing blood lead values nationally, the data must be stratified by year to have a chance to see any trends that are present. As seen, most of the observed trends are much lower than predicted by the IEUBK model. This suggests that the contribution of soil lead to blood lead is relatively small within the range of 0- 1000 ppm.

Figure I - 4. Blood Lead Values for Children ($0 \leq 84$ Months) in East Helena from 2001 to 2007 in Relation to Remediation Status and Soil Lead Concentrations

PANEL A: BASED ON YARD-WIDE AVERAGE SOIL LEAD



PANEL B: BASED ON MAXIMUM SOIL LEAD IN YARD



Reliability and Appropriateness of Blood Lead Data

Based on an evaluation of the data, the data may be used to draw conclusions regarding the site, even though the data were not collected in the same way that data would be collected for a traditional epidemiological study.

The following summary of the analysis of the blood lead sampling program was given in a letter from EPA to Lewis and Clark City-County Department of Health dated March 13, 2007. EPA's Region 8 toxicologists and risk assessors prepared the analysis. The letter and attachment state, "The East Helena Lead Education and Abatement Program, administered by the City-County Health Department, has been performing a blood lead survey in East Helena for a number of years. The data from this survey show that blood lead values have decreased substantially over time, and that the incidence of PbB above 10 ug/dL is now very close to zero. These data support the conclusion that cleanup activities at the site, coupled with the effects of national programs to reduce lead in the environment, have been successful in reducing lead exposures from all sources in East Helena to acceptable levels. However, in order for this conclusion to be valid, it is important to examine the quality of the blood lead data set. Based on a consideration of participation rate, statistical uncertainty, spatial representativeness, and soil lead representativeness, it is concluded that the blood lead data generated by the County program are reliable and are appropriate for use by risk managers and other health professionals in assessing site conditions."

The detailed analysis is contained in the referenced letter and attachment that can be provided upon request. The percentage of East Helena children that participated in blood lead screenings ranges from 15 to 52 percent by neighborhood for the period from 1991 to 2006 (see Table I-3). The total number of unique participants who have participated from each neighborhood has been determined from the blood lead database maintained by Lewis and Clark City-County. [Placeholder to discuss the comprehensive 1991 child lead study in which a neighborhood census was performed within 2.25 miles of the smelter, and 72% of eligible children participated.]

When a blood survey is part of an on-going program, as is the case at East Helena, both the total number of children who have participated and the size of the eligible population (the total number of children who were age 0 to 6 at any time during the study) will increase each year, so the participation rate (PR) is a function of time. As seen in Table I-3, the participation rate varies between neighborhoods, but is generally about 25 to 50 %. Assuming that the blood lead program will continue to operate for some time into the future, and that the number of new children recruited each year will remain similar to current values, these rates will tend to increase over time.

There are two key factors to consider when deciding if the participation rate is enough to provide a reliable data set for drawing conclusions about blood lead levels in area children : statistical uncertainty and representativeness. The analysis showed that the data are highly representative, both temporally and spatially. Blood level data have been collected at the site since 1975 and through the Lewis and Clark County Lead and Education Abatement Program since 1995. The data span a wide range of time and they cover all of East Helena's

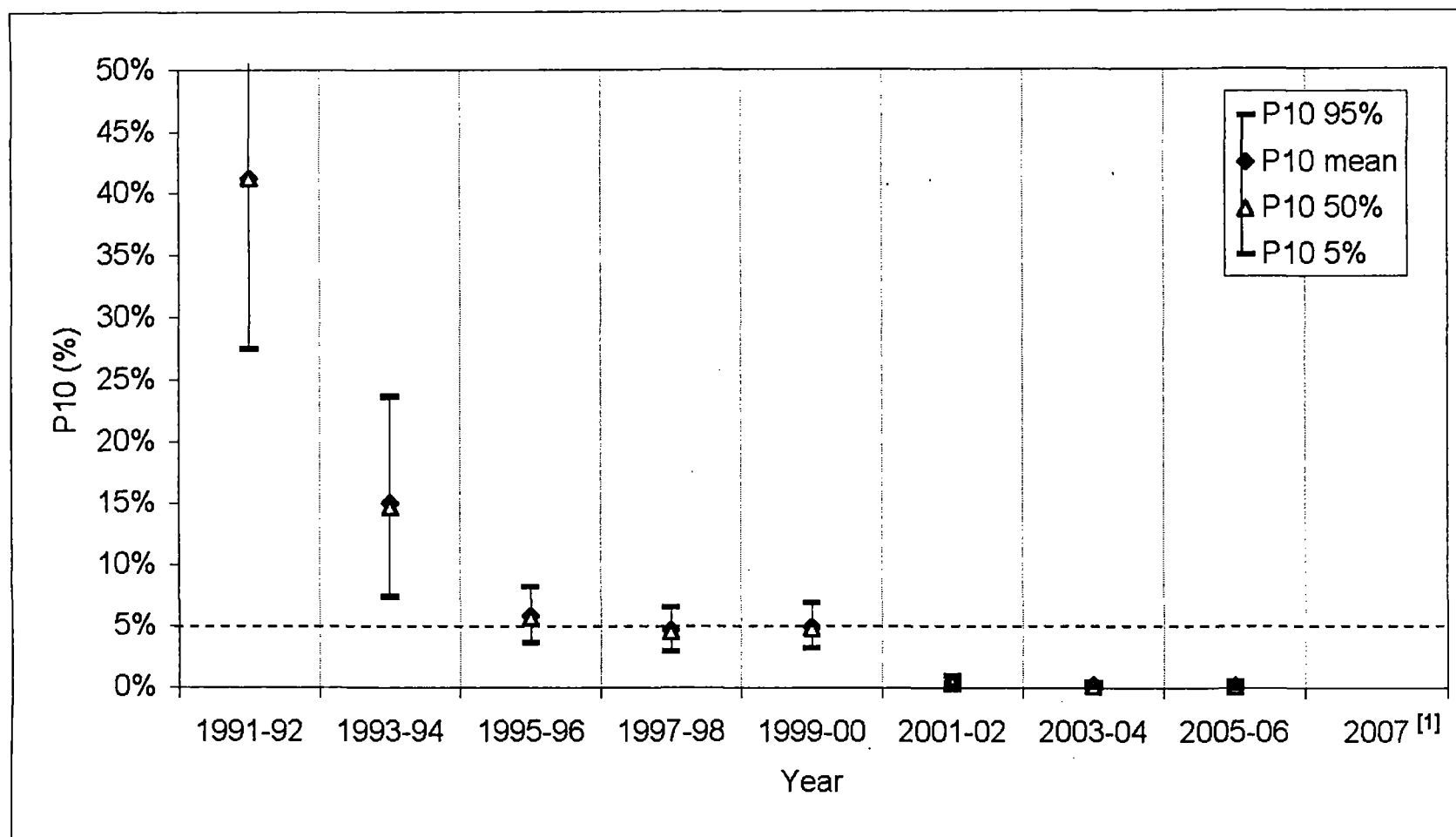
neighborhoods. Sheets 2 and 3 of this ROD show the residential locations at which children tested for blood lead levels resided, and reflect the spatial representativeness. Another factor in the assessment of the data is the level of uncertainty. Figure I - 5 shows the uncertainty associated with the blood level data at East Helena. As seen, the uncertainty in the data set is low indicating that the data are sufficient to evaluate compliance with health-based objectives with acceptable confidence.

Table I-3. Children Blood-Level Sampling Participation Rate

| Neighborhood | Number of children age 0-6 based on 2000 survey | Total number of children age 0-6 who have participated between 1991-2006 | Participation Rate |
|----------------------------|-------------------------------------------------|--------------------------------------------------------------------------|--------------------|
| Grandview | 53 | 56 | 34% |
| East Gate 2 | 198 | 160 | 26% |
| Sunny Lane + East Gate 1 | 187 | 148 | 25% |
| La Casa Grande | 43 | 70 | 52% |
| Canyon Ferry | 68 | 60 | 28% |
| Manlove | 19 | 9 | 15% |
| E. Helena + West E. Helena | 188 | 240 | 41% |

It is unlikely that the extremely low blood lead levels observed in East Helena are due in significant measure to public education and awareness. Although the current program of lead education is valuable in providing citizens with knowledge they may utilize to reduce risk from lead exposure, EPA does not believe that this program could be responsible for generating a bias in the data set that could account for the current observations. Previous study results suggest that awareness of lead hazards may result in temporary changes in behavior which reduce exposure to lead hazards and blood lead levels, but the changes are not long term. For example, in the Urban Soil Lead Abatement Demonstration Project, (USEPA, 1996), blood lead levels had rebounded by the second year of the study. The blood lead studies in East Helena have been conducted for more than 15 years. The results are consistently low, and the trend is downwards. It is unlikely that the data are influenced to any large extent by public awareness, and therefore the changes observed in the blood lead data are considered to be permanent, and not a result of temporary behavioral changes. Moreover, the blood lead data indicate that current exposure levels are sufficiently far from 10 ug/dl that even if there were some small bias in the data (which is thought to be unlikely), the judgment that the blood lead data indicate the current soil cleanup program is effective remains valid.

Figure I - 5. Uncertainty in P10 Values for Children (0 to \leq 84 Months) in East Helena



[1] Data for 2007 consist of 6 data points; the observed P10 is 0%. The data are too limited to derive quantitative estimates of uncertainty.

II. NATIONAL GUIDANCE FOR LEAD SITES AND EAST HELENA'S ROLE IN ITS DEVELOPMENT

COMMENTS

- **Laura and Brian Vachowski** – “If the lead cleanup levels were based on blood lead study data as the plan suggests, such a basis is contradicted by EPA's own guidance”

We additionally note that if the lead cleanup levels were based on blood lead study data as the plan suggests, such a basis is contradicted by EPA's own guidance. See EPA Superfund Contaminated Residential Sites Handbook (August 2003) at pg. B-4 (“OSWER recommends that blood lead studies not be used for establishing long-term remedial ... cleanup levels at lead sites.”)

- **Lewis and Clark City-County Board of Health** – “BOH does not agree that the data from the blood lead studies should be used in establishing the lead cleanup level”

... First, the BOH does not agree that the data from the blood lead studies should be used in establishing the lead cleanup level. EPA guidance indicates, “The Office of Solid Waste and Emergency Response (OSWER) recommends that blood-lead studies not be used to determine future long-term risk where exposure conditions are expected to change over time; rather, they be considered a snapshot of ongoing exposure under a specific set of circumstances (including community awareness and education) at a specific time” USEPA, 2006a).

- **Montana Department of Environmental Quality - Adopt Risk Based Cleanup Levels that Conform to Guidance**

Adopt risk-based cleanup levels for lead (and arsenic) for current and reasonably anticipated residential soils that conform to EPA regulations and guidance.

EPA RESPONSE TO COMMENTS PERTAINING TO NATIONAL GUIDANCE

The first few ~~child~~ lead studies involving East Helena's children preceded both the development of directives (i.e., guidance) for lead sites and the development and application of a mathematical model for predicting blood lead levels from environmental and biological data. In fact, East Helena's early childhood lead studies were often referred to as “the model for the model,” during the developmental stages of the lead model.

Some of the earliest directives issued by EPA regarding lead sites (circa late 1980s and early 1990s) were developed in consultation with toxicologists and other medical professionals and scientists who participated in the design, conduct and interpretation of childhood lead studies performed at East Helena.

Quoting from one of the earliest of directives (OSWER Directive #9355.4-02, September 1989):

"The purpose of this directive is to set forth an interim soil cleanup level for total lead, at 500 to 1,000 ppm, which the Office of Emergency and Remedial Response and the Office of Waste Programs Enforcement consider protective for direct contact at residential settings.

"This [directive] adopts the recommendation contained in the 1985 Centers for Disease Control (CDC) statement on childhood lead poisoning and is to be followed when the current predicted land use is residential. The CDC recommendation states that.... "lead in soil and dust appears to be responsible for blood levels in children increasing above background levels when the concentration in the soil or dust exceeds 500 to 1,000 ppm." Site-specific conditions may warrant the use of soil cleanup levels below the 500 ppm level or somewhat above the 1,000 ppm level."

This 1989 directive was issued at a time when East Helena's children had been tested several times and more than one-half of the children tested exhibited blood lead levels greater than 10 ug/dl. (EPA and CDC had by then collaborated to reduce the national "level of concern" from 25 ug/dl to 10 ug/dl.) Soil testing conducted at that same time revealed that East Helena's residential neighborhoods averaged about 1,200 to 1,500 ppm lead. It is important to note here that the results of early blood lead testing and soil lead testing in East Helena contributed significantly to EPA's early directives regarding lead, blood lead studies and lead cleanup action levels.

Quoting from another early directive (OSWER Update on Soil Lead Cleanup Levels, August 29, 1991):

"The UBK Model can be run with either site-specific data or its default parameters. Concern exists, however, over the use of the default parameters versus site-specific data for input to the model. OSWER has decided to address these concerns, as well as the appropriate method to use for collecting site specific data, before issuing a directive recommending the UBK model as the preferred method for setting lead cleanup levels at CERCLA/RCRA sites.

"Headquarters should also be consulted on removal actions which use soil lead cleanup levels derived by the UBK model and which fall outside the 500 - 1,000 ppm range. For further information please contact Susan Griffin of the Toxics Integration Branch.

"The recommendations in this document are intended solely as guidance. EPA decision makers may act at variance with any of the recommendations contained in this document."

This 1991 directive coincided with the start of a residential soil removal action for East Helena. It is not a mere coincidence that the directives of 1989 and 1991 very closely match the cleanup decisions that were made by EPA and were put into effect at East Helena in July 1991. After all, there was extensive coordination between the Region 8 toxicologists, who advised and guided decisions by the Montana Office risk managers, and OSWER. Although the model was still under development, there remained considerable uncertainty about its efficacy and accuracy, particularly in respect to the East Helena site, where so much site-specific data had already been collected and interpreted. OSWER was keenly aware of this.

By 1994, when EPA guidance began to shift its emphasis toward greater dependence on the newly-developed lead model - now called the IEUBK model and not the UBK model - the

East Helena soil removal action had progressed to a point where the majority of yards at residences known to have young children residing there were either cleaned up or were scheduled for immediate cleanup. These were the "high priority properties" and the cleanup focused first on them.

However, more important progress had been made by Asarco, the Montana Air Quality Bureau and EPA, working together over several years, toward greatly minimizing the air/fine particulates pathway. This pathway, despite early doubts expressed by EPA, demonstrated itself to be a more significant contributor to children's blood lead levels than the soil pathway.

Nevertheless, with two main pathways significantly diminished (the air/fine particulates and residential soils pathways), and with administrative orders in place to further diminish these pathways, East Helena children's blood lead levels by 1994 and 1995 had already more than achieved the goal that was being established by the IEUBK model. ("We recommend a model projection benchmark of either 95% of the sensitive population having blood lead levels below 10 ug/dl or a 95% probability of an individual having a blood lead below 10 ug/dl.")

Figure I - 1 shows that by 1994 and 1995, the 95th percentile of children tested was less than 10 ug/dl, and the means were approaching 4 ug/dl. Thus, by 1994-1995, EPA, MDEQ and Lewis and Clark County felt increasingly confident that both the cleanup action level for soil (1,000/500 ppm lead) and the efforts to reduce emissions (to 1.5 ug/m3) were proving to be successful. Still, in 1995, EPA, Asarco, MDEQ, and Lewis and Clark County collaborated in conducting an updated risk assessment, including running the IEUBK model. The results of this updated risk assessment demonstrated that the air/fine particulates pathway did, in fact, matter more than was originally thought, and that the cleanup action level (1,000/500) should not be modified. The cleanup continued, as did blood lead monitoring.

Pertinent excerpts from a July 1994 OSWER Directive (# 9355.4-12), read as follows:

"Recent developments. Following discussions among senior regional and OSWER management, the OSWER workgroup.... recommended ...a "two step" decision framework... [To] identify a single level of lead in soils that could be used as...the PRG [Preliminary Remediation Goal] for CERCLA site cleanups... but would also allow site managers to establish site-specific cleanup levels (where appropriate) based on site-specific circumstances."

"Findings from the three cities (Baltimore, Boston, and Cincinnati) of the Urban Soil Lead Abatement Demonstration Project... indicate that dust and paint are major contributors to elevated blood lead levels in children. Furthermore,any strategy to reduce overall lead risk at a site needs to consider not only soil, but other sources and their potential exposure pathways." [Emphasis added]

"Use of Blood Lead Data: In conducting remedial investigations for CERCLA.... [This] interim directive recommends evaluating available blood lead data. In some cases, it may be appropriate to collect new or additional blood lead samples.... Therefore, any available blood lead data should be carefully evaluated by EPA regional risk assessors to determine their usefulness."

In respect to the last paragraph above, but as well to excerpts of other directives noted above, it was perfectly appropriate for EPA to consider the East Helena blood lead data then, and it remains appropriate to this day. The coordination that occurred among regional toxicologists, project managers, local health professionals (who conducted the studies according to carefully coordinated protocols) and OSWER was exemplary.

While it is accurate to conclude that EPA guidance through the mid- to late 1990s reflects a shift of emphasis towards greater dependence on the IEUBK lead model, it is equally accurate to see and conclude that the blood lead data for East Helena's children were recognized as vital, were consistent with recommendations made through directives issued by OSWER, and were given careful consideration by OSWER during the development of a predictive model and the evolving guidance that followed.

EPA does not interpret past or current guidance to mean that the model—and only the model—should be used to finish the cleanup at East Helena, to the exclusion of arguably the most complete collection of site-specific data available for a lead site. EPA believes that other people involved in the early coordination efforts and the coincident decisions would support that interpretation.

OSWER Directive # 9200.4-27P, as cited in Superfund Lead-Contaminated Residential Sites Handbook (USEPA, 2003), states that the IEUBK model is not the only factor to be considered in establishing lead cleanup goals, and that EPA decision makers retain the discretion to adopt approaches on a case-by-case basis as appropriate. EPA's Risk Assessment Guidance for Superfund: Process for Conducting a Probabilistic Risk Assessment (USEPA, 2001), recommends that multiple criteria form the basis of the remedial decision when selecting a final cleanup level within the plausible range. The consideration of biomonitoring data (blood lead data) is listed as one example of such criteria.[Emphasis added]

The first section of this Responsiveness Summary describes children's blood lead test results and the relationship to the lead fine particulate pathway, and the absence of any meaningful relationship between blood lead data and remaining soil lead data. National guidance supports use of these blood lead data in the determination of cleanup goals.

A remedial action goal for East Helena is that no child should exhibit a blood lead level greater than 10 ug/dl and at least 95% of children should remain at or below 4 ug/dl. This goal was first achieved in 2001, it continues to be met or exceeded, and it surpasses the national goal for blood lead levels based on applications and predictions of the mathematical (IEUBK) model. Should this more stringent, site-specific goal for East Helena fail to be met in the future, for any reason, there are procedures in place or proposed in the ROD to reexamine all relevant aspects of the remedy, including the soil cleanup action level.

III. PREDICTIVE MODELING (IEUBK MODEL)

COMMENTS

- **Moriah Bucy – “Default values should be input for all variables for which site-specific data is not available”**

EPA chose to input "regional data" from the Butte and Anaconda Superfund sites in its

IEUBK model to come up with a site-specific risk-based cleanup level for East Helena. Data from another Superfund site is not specific to East Helena and therefore is inappropriate to use in the model. Default values should be input for all variables for which site-specific data is not available.

- **Montana Department of Environmental Quality – “It is inappropriate to use ‘regional data’ if site-specific input parameters cannot be calculated”**

EPA’s Technical Review Workgroup’s (TRW) recommendation for running the lead model (IEUBK model) is to use default values unless representative site-specific data appropriate to the variable in question are available. It is inappropriate to use “regional data” if site-specific input parameters cannot be calculated. Thus, the Record of Decision should not reference or use regional data in the text or in the tables. EPA Region 8 chose the parameters, many of which DEQ and the EPA Technical Review Workgroup (February 17, 2006, memo) consider to be invalid or unrepresentative, and not equally plausible.

- **Lewis & Clark City-County Board of Health – “The BOH believes it is appropriate to use the site-specific data obtained for the soil dust absorption fraction and the fraction of soil in dust term. The remainder of the exposure parameters should not be adjusted from the default values”**

In performing the IEUBK modeling, the BOH believes it is appropriate to use the site-specific data obtained for (1) the soil dust absorption fraction of 71% relative bioavailability (35.5% when expressed as an absolute bioavailability) (USEPA, 1999b) and (2) the fraction of soil in dust term of 0.17. The remainder of the exposure parameters should not be adjusted from the default values, as described below:

Soil Ingestion Rates -EPA guidance indicates the default soil and dust ingestion values are based on several observation studies of soil ingestion in children and are appropriate and representative estimates of soil ingestion for U.S. children. The IEUBK Model was calibrated and validated with the default ingestion values; therefore, EPA (2006a) indicates it is unknown how the use of alternate ingestion rates would impact the model predictions. Adjustments to the ingestion rates may only be made after approval by EPA's Office of Emergency and Remedial Response (OERR).

Before the ingestion rates measured in the Anaconda study could be used in the IEUBK Model, the ingestion study (Stanek and Calabrese, 2000) must be submitted to OERR for review by the Technical Review Workgroup for metals and asbestos (TRW). If the OERR approves of the adjustment to the ingestion rates, they will be incorporated into the guidance and shared among other EPA Regions (USEPA 1999a). Therefore, the BOH believes the default soil and dust ingestion values are most appropriate.

Geometric Standard Deviation (GSD) - EPA guidance (USEPA, 2006a) indicates that site-specific estimates of GSD should not be substituted for the default value without detailed, scientifically defensible studies documenting site-specific differences in child behavior or lead biokinetics. Such site-specific studies are not available for East Helena. Therefore, the BOH believes the default GSD is most appropriate.

The BOH appreciates the responses from and the discussions held with EPA Region [8] toxicologists regarding this issue. We understand from these discussions that the EPA Region VIII toxicologists have a differing opinion than the TRW regarding the use of

variable inputs, specifically for soil ingestion rates and GSD (TRW, 2006). In the interest of protecting public health, we have chosen the more conservative of the EPA opinions (i.e., TRW).

Using the appropriate input values (as described above), the IEUBK Model predicts a lead cleanup concentration of 520 ppm (using the geometric mean as the point estimate). In other words, a lead cleanup concentration of 520 ppm would limit the risk of childhood blood lead levels exceeding 10 micrograms per deciliter (ug/dl) to 5% of the population (i.e., the current OSWER cleanup goal) (EPA, 1994).

- **Lewis & Clark City-County Board of Health - "A deterministic approach using predictive blood lead modeling should be used to establish a health-protective cleanup level for lead"**

... Second, differing opinions regarding the quantitative uncertainty analysis exist within EPA. It is the BOH'S understanding that the EPA Region [8] toxicologists believe a quantitative uncertainty analysis can be used in conjunction with the IEUBK to develop a range of potential cleanup values, while EPA's Technical Review Workgroup for metals and asbestos (TRW) believe a deterministic assessment resulting in a single cleanup value is appropriate (TRW, 2006). The TRW is an EPA interoffice workgroup with the specific mission to review applications of lead risk assessment methodologies and is responsible for developing national guidance and documentation on the structure, application, and validation of the IEUBK Model. The BOH does not have the level of expertise to determine which EPA opinion is the most scientifically valid for East Helena. In the interest of protecting public health; we believe it is prudent to use the more conservative approach, in which the deterministic assessment is used to generate a single cleanup value.

Consequently, the BOH believes that a deterministic approach using predictive blood lead modeling should be used to establish a health-protective cleanup level for lead in East Helena. Blood lead modeling should be focused on the most-sensitive potential receptors (i.e., children and fetuses). The IEUBK Model is appropriate for childhood receptors; however, the BOH has specific recommendations for input values that are described in the following section. EPA's Adult Lead Model is appropriate for estimating fetal blood lead concentrations for pregnant women exposed to lead contaminated soil (USEPA, 1996). Fetal blood modeling should be included in the development of a health protective lead cleanup level in East Helena. Specifically, a soil contact-intensive scenario should be evaluated to assess the health protectiveness of the lead cleanup level for fetal receptors (e.g., a pregnant female construction worker exposure scenario) (USEPA, 2004b).

- **Montana Department of Environmental Quality - "There should be no conversion of the model's output to a new [Geometric Mean]"**

The Lead Model Re-Evaluation report shows that lead from residential soils and homes still present a risk of unacceptable lead exposure with soil lead levels above 520 ppm. The Record of Decision should include the Results statement from the report, "Based on the site-specific inputs to the model... the value of 5% at a soil concentration of approximately 520 ppm. This value is identified as the site-specific RBC for lead in soil." DEQ accepted the site-specific parameters used to calculate this RBC but agreed with EPA's Technical Review Workgroup (TRW) in their recommendation "that there should be no conversion of the model's output to a new [Geometric Mean]. Use of the arithmetic mean produces a RBC of

610 ppm lead (which DEQ has previously accepted as appropriately protective).

- **Montana Department of Environmental Quality - Implement the Technical Review Workgroup's Recommendations**

Implement the EPA Technical Review Workgroup's recommendations in their February 17, 2006 memo.

- **Lewis & Clark City-County Board of Health - Identify the members of the risk management team**

Page 10, 2nd column, paragraph 2 (of the Proposed Plan) - Who is the risk management team? The proposed plan states, "All of the *alternative input values* utilized were specifically requested by the *risk management team* and are deemed to be scientifically valid." Please identify the composing members of the risk management team.

- **Lewis & Clark City-County Board of Health - "The lead cleanup level should also allow for the uncertainty associated with the toxicity of lead"**

The development of the lead cleanup level should also allow for the uncertainty associated with the toxicity of lead, a probable human carcinogen. Recent data indicates that blood lead levels below 10ug/dl may cause significant health effects. EPA (2006b) indicates "Even children with low lead exposure levels (having blood lead levels of 5 to 10 ug/dl or, possibly, somewhat lower) are at notable risk, due to the apparent non-linear dose-response relationships between blood lead levels and neurodevelopmental outcomes". Further, EPA (2006a) indicates "There is no level of lead exposure that has yet been identified, with confidence, as clearly not being associated with possible risk of deleterious health effects". Regarding fetal exposure, studies have found that women who have been exposed to lead in childhood have accumulated large stores in their bones that may mobilize from bone to blood during late pregnancy and lactation. An increased risk of spontaneous abortion, neurobehavioral deficits in offspring, and, in some studies, gestational hypertension, have been reported at pregnancy blood lead levels at concentrations.

The BOH appreciates the information provided from EPA (2007) regarding the Centers for Disease Control explanation for the present level of concern of blood lead levels (used in the current OSWER cleanup goal). Indeed from this explanation, and recognition that many current environmental and public health policies at the federal level do not represent scientific consensus, it is possible that the level of concern may not be lowered at anytime in the foreseeable future. Then again, over the past few decades, the blood lead level of concern has decreased from 40 ug/dl to 10 ug/dl. The BOH believes it is reasonable to anticipate the level may decrease again in the future. Our belief is supported by substantial current scientific literature. EPA has noted as recently as October, 2006: "Some recent studies of Pb neurotoxicity in infants have observed effects at population average blood-Pb levels of only 1 or 2 ug/dl; and some cardiovascular, renal, and immune outcomes have been reported at blood-Pb levels below 5 ug/dl." (EPA 2006b). As such, the lead cleanup level should be developed taking into consideration this possibility.

- **Laura and Brian Vachowski - Lead effects and age**

Recent studies demonstrate that detrimental lead effects are not limited to children under the

age of 7, but in fact, can be seen in children up to the age of 18. Nothing in the proposed plan appears to recognize that fact.

EPA RESPONSES TO COMMENTS PERTAINING TO PREDICTIVE MODELING

- *EPA agrees with the use of site-specific data as inputs to the IEUBK model to estimate risk-based concentrations. Site-specific inputs included the dust-soil relationship based on samples collected in East Helena, and the relative bioavailability of lead.*
- *EPA advocates the use of the best available science and information that is representative of a site (and the people who live there) to develop an accurate and useful assessment of the health risks. Default exposure assumptions are intended to be conservative placeholders when no other information is available. However, they may not provide an accurate characterization of a site's health risks. As mentioned, the screening level human health risk assessment for the East Helena site used site-specific data from East Helena. The assessment also used information from more current scientific studies to explore alternative assumptions for the soil intake rates and the geometric standard deviation in an assessment of uncertainty and variability.*

This assessment of uncertainty and variability is required by EPA's Risk Assessment Guidances for Superfund (USEPA 1989, USEPA 2001), and its importance is emphasized in the 1995 memorandum Risk Characterization Policy and Guidance from EPA's Administrator. EPA's Risk Assessment Guidance for Superfund: Process for Conducting a Probabilistic Risk Assessment (USEPA, 2001), recommends a tiered process beginning with a screening level point estimate risk assessment, and increasing in complexity to quantitatively explore the variability and uncertainty in that screening level assessment.

EPA has issued national policy statements emphasizing the importance of conducting quantitative uncertainty analysis in risk assessments, in conjunction with guidance documents on how to conduct such an assessment (USEPA 1995, USEPA 2001). EPA policy states that a quantitative uncertainty analysis "will be evaluated and utilized in a manner that is consistent with other risk assessments submitted to the Agency" (USEPA, 1997). The inclusion of an uncertainty analysis in the East Helena risk assessment is consistent with national EPA policy and objective scientific reasoning.

An evaluation of alternative soil intake rates or alternative GSD values in an uncertainty analysis is both appropriate and recommended. To neglect to conduct such an uncertainty analysis would be contrary to existing EPA guidance and objective scientific reasoning.

While the EPA reviewed the TRW's recommendations and respects their perspective with regard to uncertainty analysis, EPA feels that the quantitative uncertainty analysis is appropriate. In fact, the assessment of uncertainty is necessary according to the foregoing guidance, and furthermore, is mandated by Congress through the National Contingency Plan.

- *The default soil intake rates in the IEUBK model are based on some of the first soil ingestion studies ever conducted during the 1980's. Those studies have since been criticized for a number of issues, including not analyzing tracer metals in the diet (which is a significant source of tracer metals), not accounting for other sources of tracer metals in the child's environment, and the inability to resolve high variability among different tracer metals. Since that time, soil ingestion studies and our ability to interpret the data, have significantly*

improved. The East Helena evaluation of risk-based concentrations through the uncertainty analysis used the most recent soil ingestion study conducted on children in Anaconda, Montana (Stanek and Calabrese, 2000), which represents the best science available at this time. This information suggests that soil intake rates may be much lower than those currently used for defaults in the IEUBK model.

- The magnitude of the risk from lead is evaluated in the model by estimating the probability that blood lead will exceed 10 ug/dL (P10). The model predicts, or estimates, the expected distribution of blood lead values in a population of exposed children by assuming a lognormal distribution with a specified geometric mean. To predict a distribution of possible blood lead levels above and below a mean, the EPA model requires an assumed statistic that estimates the amount of variation in blood lead levels. This statistic is called the geometric standard deviation (GSD). In other words, the GSD is a measure of the variability in blood lead among many different children that are all exposed to the same levels of lead in the environment.

The geometric standard deviation (GSD) parameter in the IEUBK model represents the variability in blood lead levels that children exposed to the same amount of lead in soil, water, air, diet, etc. would have due to differences in their physiology or behavior (USEPA, 1994). The default value in the IEUBK model is taken from the National Health and Nutrition Examination Survey (NHANES). It represents variability in blood lead levels from not only physiological and behavioral differences, but also differences in exposure to all levels of lead in soil, water, air, diet, etc. Studies in Region 8 which looked at lead levels in both children and the environment around them, and controlled for the varying lead levels in environmental media, found GSD values in the range of 1.3 – 1.5 (Griffin et al, 1999). The alternative GSD value explored in the East Helena assessment is more typical of children living in the Western U.S. and more accurately represents the definition of the GSD as intended in the EPA lead guidance.

As discussed in the 2005 report, Re-evaluation of the IEUBK-Based Clean-up Level for Lead in Soil in East Helena, Montana, the output of the IEUBK model is defined by EPA guidance as a geometric mean blood lead level (USEPA, 1994). It is not possible mathematically to multiply an arithmetic mean by an arithmetic mean and end up with a geometric mean. This has long been recognized as an error on the part of the IEUBK model. In the uncertainty analysis of the East Helena assessment, the correct mathematical interpretation of the model was explored quantitatively.

- EPA believes that it is unnecessary to perform a quantitative evaluation of risks to a construction worker, because it is known that the soil level that will be protective of an adult (even a contact intensive adult) is higher than the level needed to protect young children.
- The risk management team that reviewed the alternative inputs into the IEUBK model consists of the EPA Region 8 Remedial Project Manager and the EPA Montana office Director and Deputy Director.
- EPA agrees that there is uncertainty associated with the toxicity value for lead as well as the exposure assumptions. However, both EPA policy (USEPA, 1997) and guidance (USEPA, 2001) on characterizing variability and uncertainty strongly recommend against applying a quantitative uncertainty analysis to the dose-response relationship in human health assessments. According to EPA "such activities require contaminant-specific national

consensus development and national policy development" (USEPA, 2001).

- *EPA agrees that the adverse effects of lead exposure during childhood are long lasting, and effects may be observed in older children. However, in selecting cleanup strategies, attention is focused on young children for three reasons: 1) young children tend to have higher exposures (per unit body weight) than older children or adults, 2) children tend to absorb a higher fraction of the ingested lead than older children or adults, and 3) young children are more sensitive to the adverse effects of lead than older children or adults. Thus, when the environment is protective for young children, older children and adults will also be protected.*

IV. LEAD CLEANUP ACTION LEVELS

COMMENTS

- **Mr. Stipich, East Helena Resident – “It [lead cleanup level] should stay at 1,000 parts per million”**

Comment: ... I think that. I agree that there should be testing and everything on the children in the future, but I think we should put an end to the cleanup in East Helena and let people get back to their normal lives . . .

- **Terrie Casey, Mayor, City of East Helena - “We want to see the Record of Decision with the continuation of the remediation level at 1,000 ppm”**

The proposed plan has one alternative 3R that recommends remediation when there is a measurement of 500-ppm lead in the soil. Since 1991 there have been 570 residential lots cleaned up using the trigger action level of 1,000 ppm. How will this new plan affect yards that have already been remediated? Will some residences be seen as "contaminated" even though their yards have been remediated under the initial regulations? It seems like a poor plan to begin remediation under one set of regulations and then to change the standards when the end of the cleanup and a Record of Decision is in sight. This has the potential to create conflict within the community and has legal ramifications as far as citizens purchasing property through a realtor and being assured, not only by the realtor, but also by the Lewis and Clark Lead Abatement office, as well as Hydrometrics that their yard has been cleaned up to the designated standards....

We want to see the Record of Decision with the continuation of the remediation level at 1,000 ppm. The statistics that the Lead Abatement office has, will support this.

- **Tom Bourns – “What happens if subsequent analyses indicate that . . . it [lead cleanup level] should have been 500 ppm?”**

...What happens if subsequent analyses indicate that, woops, it [1000 ppm lead concentration in soils Risk Assessment based cleanup level] should have been 500 ppm; what do we do now...?

- **Laura and Brian Vachowski – “EPA's selection of lead levels have[sic] no apparent rational basis and . . . are not protective of human health.”**

The EPA's selection of lead levels have no apparent rational basis, and as applied, are not protective of human health. The EPA has failed to provide any legitimate basis for requiring a 500 ppm lead cleanup level for undeveloped lands, all the while allowing developed residences to contain levels of lead between 500 ppm and 1,000 ppm. Either 1,000 ppm is protective or 500 ppm is protective. If they both are equally protective or the difference is negligible (as is suggested on page 12 of the plan), then there is no rational basis for the undeveloped land lead cleanup level to be 500 ppm. If 1,000 ppm is not protective, then every property exceeding 500 ppm should be cleaned up by the EPA to 500 ppm.

Furthermore, under the plan, neighbor A could have 999 ppm of lead on his developed property and the EPA would require no cleanup. Neighbor B, right next door, could have 1,001 ppm lead on his developed property (or 501 ppm on his undeveloped property) and the property would be required to be cleaned up to 500 ppm. This would result in a patchwork of properties, some meeting a protective level of 500 ppm and others having lead levels almost twice as high. Indeed, under the existing plan, should we develop our undeveloped land and have to cleanup the property to 500 ppm, it would be contiguous to our house area, where the lead levels exceed 500 ppm. Such results clearly cannot be deemed protective.

- **Montana Department of Environmental Quality – “DEQ supports EPA in proposing a soil lead action level of 500 ppm”**

DEQ supports EPA in proposing a soil lead action level of 500 ppm for the undeveloped lands proposed for development but would also support the risk-based concentration of 610 ppm throughout the operable unit. DEQ also tentatively supports EPA's proposed recreational and commercial exposure cleanup levels although DEQ needs to review the assumptions, calculations, and risk management basis used to develop these new cleanup levels.

- **Montana Department of Environmental Quality - “DEQ requests that EPA modify its alternative based on qualifying yard quadrants greater than 610 ppm lead”**

For existing residential yards, DEQ supports continuing with all the sampling and cleanup protocols developed in the past 15 years under the removal action's administrative order on consent, with the exception of the soil lead level needed for a yard to qualify for cleanup. DEQ supports cleanup of all qualifying quadrants or sections of the yard with soil lead concentrations above the risk-based concentration (RBC) of 610 parts per million (ppm). DEQ requests that EPA modify its alternative based on qualifying yard quadrants greater than 610 ppm lead (and associated cost estimate with time frame for implementation) in the Record of Decision, and identify that alternative as a component of the selected remedy.

- **Montana Department of Environmental Quality – “DEQ reserves further comment on the proposed action level pending the ATSDR evaluation”**

Earlier in 2007 DEQ requested the Agency for Toxic Substances and Disease Registry (ATSDR) to evaluate the protectiveness of the proposed soil lead action level of 1,000 ppm compared to the RBC. ATSDR recently informed DEQ that they would complete their evaluation after close of the public comment period. Therefore, DEQ reserves further comment on the proposed action level pending the ATSDR evaluation.

EPA RESPONSES TO COMMENTS PERTAINING TO LEAD CLEANUP ACTION LEVELS

Residential

EPA agrees that the cleanup level should remain at 1,000/500 ppm soil lead. Once the cleanup is complete according to protocols selected by EPA (which are based on the updated protocols used in the removal actions that have been developed in consultation with Lewis & Clark County and the Montana Department of Environmental Quality), the community-wide average lead levels will be well below 500 ppm lead. In fact, the community-wide average has been considerably less than 500 ppm lead for about 10 years.

The high degree of variability of lead deposition within residential areas of East Helena made it necessary to devise a two-part cleanup action level for lead in residential soils (1,000/500 ppm).

Soil lead cleanup action levels for the two types of properties (i.e., existing residential properties versus undeveloped lands that may in the future undergo a change in land use from an agricultural use to a residential use) are not so dissimilar. The differences between the two cleanup approaches, though subtle, are uniquely suited to the distribution of lead in the soils of each property type. The cleanup approaches to residential and undeveloped properties present a rational approach to a complex problem.

Soil lead concentrations of existing residential properties in East Helena exhibit an extraordinarily high degree of variability (also termed heterogeneity). Lead concentrations within a single yard commonly range from lows of 150 to 300 ppm to a maximum value of 1,500 to 2,000 ppm or higher. Concentrations of lead within each yard, and from one yard to the next are unpredictable. This phenomenon is not at all surprising, given the high incidence of disturbances that have occurred during excavation, construction, laying out of streets, alleys, sidewalks and driveways, and yard development.

In recognition of the high degree of variability of lead concentrations of existing residential properties, versus the uniformity and relative predictability of lead concentrations of undeveloped properties, EPA, in consultation with MDEQ and the Lewis and Clark County Health Department, developed separate sampling protocols for the two property types. Whereas intensive soil sampling is necessary to adequately characterize existing residential properties, less intensive soil sampling will adequately characterize undeveloped properties.

The high degree of variability that is so prevalent across East Helena's residential neighborhoods became apparent beginning in the late 1980s. The two-part cleanup action level adopted for East Helena (1,000/500 ppm lead) is uniquely suited to the variability which otherwise makes it exceedingly difficult to arrive at a protective, yet cost-effective solution. The two-part cleanup action level (a) overcomes the inherent variability, (b) ensures that the cleanup will eradicate all soils greater than 1,000 ppm lead, and (c) achieves post-cleanup yard and neighborhood mean lead concentrations near the lower end of the range of 500 to 1,000 ppm lead.

The table below illustrates the high degree of variability that is typical of residential yard sampling in East Helena. Data are presented for the 46 yards that were cleaned up in 2007. Most of the yards represented in the table are located near to the outer limits of the city or outside the city limits. (The yards shaded with red are generally located nearer to the smelter.) Most of these yards are scattered among yards that did not qualify. Therefore, a "patchwork" is unavoidable irrespective of whatever reasonable action level might have been selected.

| Average and Range of Residential Soil Lead Concentrations in 2007 at East Helena Superfund Site | | | | | |
|----------------------------------------------------------------------------------------------------|-----------|------------------------|----------------------|-----------|----------|
| #- | SITE CODE | No. of Sections (1) | YARD AVG [Pb] (1) | Range | |
| | | | | High [Pb] | Low [Pb] |
| 10 | CH01 | 8 | 371 | 1393 | 101 |
| 38 | ME02 | 12 | 457 | 982 | 124 |
| 7 | CC03 | 15 | 492 | 1092 | 180 |
| 28 | MG04 | 14 | 499 | 1403 | 206 |
| 35 | MF01 | 11 | 548 | 948 | 287 |
| 20 | HA03 | 10 | 561 | 1204 | 275 |
| 4 | CD02.1 | 4 | 562 | 1144 | 181 |
| 6 | CH05 | 6 | 583 | 1852 | 40 |
| 2 | TD17 | 15 | 596 | 1172 | 254 |
| 34 | MF06 | 7 | 596 | 1060 | 420 |
| 43 | MG01 | 5 | 604 | 1003 | 192 |
| 45 | MD04 | 10 | 607 | 1364 | 250 |
| 23 | MK05 | 8 | 613 | 941 | 386 |
| 12 | CH08 | 7 | 621 | 1118 | 263 |
| 1 | TD19 | 11 | 623 | 1241 | 192 |
| 15 | TA08 | 4 | 631 | 1240 | 322 |
| 33 | MF05 | 4 | 668 | 989 | 249 |
| 29 | DD01 | 8 | 671 | 1193 | 437 |
| 26 | MI06 | 13 | 672 | 1021 | 337 |
| 27 | MI03 | 7 | 675 | 959 | 48 |
| 41 | MC04 | 10 | 681 | 1101 | 465 |
| 42 | MD05 | 10 | 706 | 1096 | 378 |
| 14 | CJ02 | 4 | 710 | 1298 | 284 |
| 24 | MJ05 | 6 | 710 | 1247 | 329 |
| 40 | MC01 | 10 | 711 | 1002 | 197 |
| 19 | CI05 | 6 | 735 | 1274 | 340 |
| 31 | MG02 | 10 | 744 | 1467 | 55 |
| 25 | MJ04 | 6 | 745 | 963 | 428 |
| 3 | CD02 | 8 | 748 | 1239 | 181 |
| 30 | DD01.1 | 3 | 808 | 1193 | 569 |
| 37 | ME06 | 5 | 819 | 1019 | 407 |
| 21 | MK08 | 4 | 876 | 1201 | 674 |
| 39 | ME01 | 8 | 879 | 1077 | 415 |
| 36 | TH17 | 8 | 895 | 1340 | 543 |
| 9 | CI08 | 4 | 975 | 1139 | 652 |
| 22 | MK07 | 7 | 980 | 1421 | 694 |
| 18 | BB02.1 | 2 | 982 | 1016 | 949 |
| 44 | MD06 | 12 | | 1552 | 546 |
| 46 | ML01 | 7 | | 1433 | 572 |
| 13 | CK03 | 13 | | 2464 | 120 |
| 17 | BB02 | 5 | | 1352 | 949 |
| 5 | CC05 | 6 | | 3620 | 227 |
| 32 | LC01 | 5 | | 2590 | 452 |
| 11 | CH09 | 5 | | 3650 | 777 |
| 8 | CH06 | 4 | | 3817 | 1654 |
| 16 | PC02 | 21 | 1902 | 2465 | 866 |

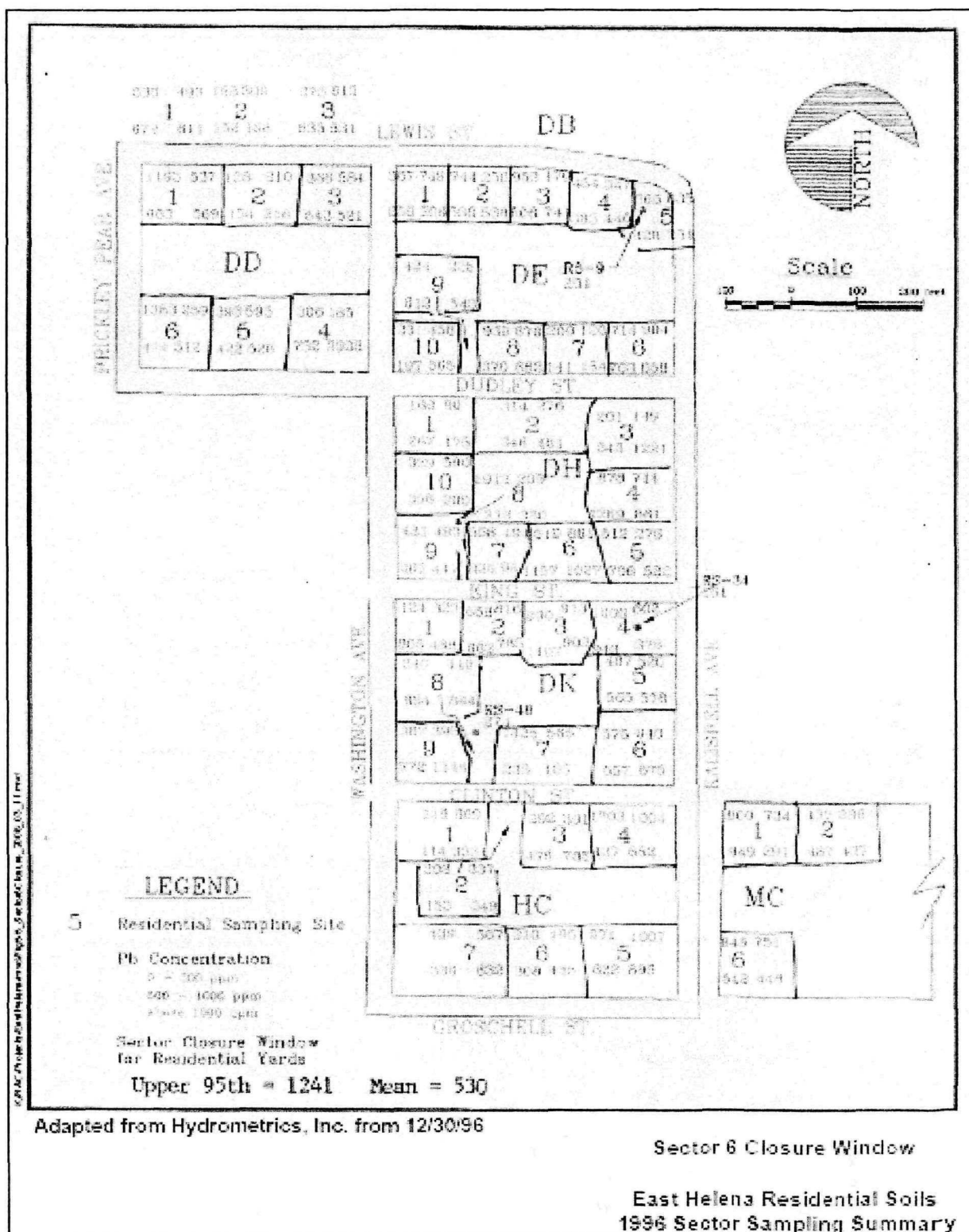
| | |
|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-----------------------------------------------------------------------------------------------------------|
| | Exposure unit average less than 610 ppm Pb. |
| | Absent sampling bias, (see footnote), these yards likely to be less than 610 ppm Pb. |
| | Of 45 yards cleaned up in 2007, only these 8 exhibited an exposure unit average greater than 1000 ppm Pb. |
| <p><u>Note 1:</u> Site-specific sampling protocol requires medium-or large-sized yards to be divided into 60-ft x 60-ft sections, and 60% of samples must be biased for highest lead concentrations. Yards divided into 10 sections, for example, will require 50 separate sample locations; 30 or more being biased for highest lead concentrations.</p> <p><u>Note 2:</u> Note the lower end of each range and the high variability. There appears to be no relationship between the highest and lowest values. As soil sampling has progressed away from the smelter, variability has increased significantly. These data and the conclusions drawn from them support continuation of the current two-part lead cleanup action level (1000/500 ppm) and the associated protocols for sampling and decision-making.</p> | |

Note: This will be 11 X 17 fold out to keep the entire figure on a single page and make it more readable.

The extraordinary degree of variability prevalent in East Helena's residential settings is also illustrated by the following figure. This figure shows actual soil lead concentrations of 48 individual yards located in a neighborhood near the East Valley Middle School. The examples shown are typical throughout all the peripheral or "outlying" neighborhoods of East Helena. These are the neighborhoods that remain to be evaluated for cleanup. All of the more central neighborhoods of East Helena, including the "Yellow Zone," have already been cleaned up.

Although a high degree of variability was also prevalent in the central neighborhoods—those closer to the smelter—it is important to note that their soil lead concentrations were significantly higher than in the peripheral neighborhoods. With very few soil samples being less than about 1,500 to 3,000 ppm lead in the "Yellow Zone," and with maximum values of 6,000 ppm or higher, there was no question that all properties should be cleaned up. Thus, the development of protective cleanup action levels was not so important for the central neighborhoods, but rather for the "outlying areas." These areas also exhibit highly variable soil lead concentrations; however, their low values are often significantly less than 400 to 500 ppm, their whole yard average values are generally around 500 to 750 ppm, and their maximum values may exceed 1,000 to 1,500 ppm.

An examination of the variability present within individual yards, as well as within the neighborhood itself, as shown in the figure is instructive. For example, Yard No. 3 of Block DH has a high lead value of 1221 ppm, a low lead value of 149 ppm, and a yard mean of 478 ppm. This yard qualifies for cleanup by virtue of its single, high value exceeding 1,000 ppm, as does Yard No. 4 "next door." But, the other yard "next door," (DH-2) and roughly half of the remaining yards in this block would not qualify for a cleanup under any reasonable cleanup strategy.



Note: This figure will be an 11 X 17 fold out.

Another look at the figure illustrates that several yards with a single value of greater than 1,000 ppm lead would not qualify for a cleanup under an assumption that the yard average would have to exceed either 500 ppm or 600 ppm lead. Note that the yard average for lead in Yard No. 3 is less than 500 ppm. The figure also aptly illustrates how it is virtually impossible to select a cleanup action level that would result in a uniform distribution of residual lead concentrations across any given neighborhood. However, once the cleanup is completed and necessary institutional controls are in place to protect the remedy from disruption, all health risks will be significantly below a level of concern.

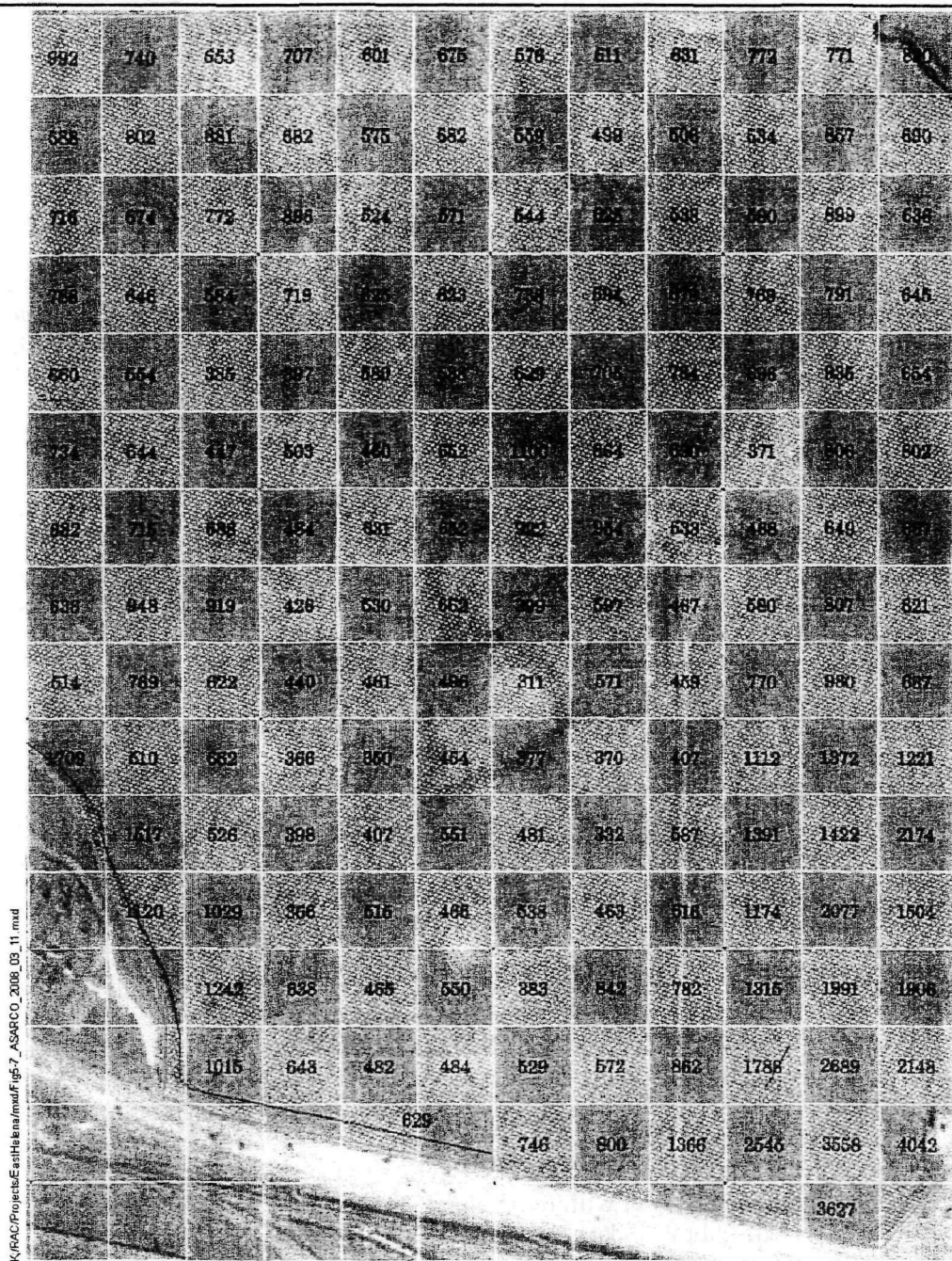
The soil sampling protocol for existing residential areas requires a minimum of 20 samples per yard. Medium- to large-sized yards require as many as 32 to 40 or more samples per yard in order to overcome the inherent variability and ensure that each yard is adequately characterized. For residential yards, sampling costs alone can range as high as \$2,000 to \$3,500 per one-quarter to one-half acre lot.

Undeveloped Lands

Undeveloped lands surrounding East Helena exhibit relatively little variability, as shown in the following figure (Figure 5-7 from the ROD) for the Asarco Lamping property (West Fields). Soil sampling that has been conducted on several hundreds of acres of agricultural land consistently reveals fairly uniform and predictable lead concentrations across each field. This fact, combined with EPA's preference for in place treatment of undeveloped lands that require some form of remediation to accommodate a new land use, substantially reduces uncertainty. Therefore, in order to keep the costs of preparing undeveloped lands affordable, but without compromising the need for an outcome that is adequately protective of the new land use, a readily achievable 500-ppm lead cleanup action level was adopted. The cost associated with bringing undeveloped lands easily into conformance with residential standards (\$4,800 per acre) is a more effective use of funds than would be requiring an equivalent sum of money, or significantly more money, to subject undeveloped lands to the same sampling requirements as is necessary for developed residential properties.

The final outcome for undeveloped lands undergoing sampling and a change in land use will not be so different from what will be achieved for residential areas. In the end, as newly-developed residential areas blend into existing residential areas, all will exhibit neighborhood average lead values less than 500 ppm. Already, this has been demonstrated in East Helena: Compare, for example, the former Diehl Fields (treated to less than 500 ppm lead and recently developed with a school and homes) and the adjacent neighborhoods that have undergone cleanup of qualified properties according to current protocols. Despite the unavoidable variability within individual yards and from yard to yard, existing residential neighborhoods as a whole will average out to approximately the same as new neighborhoods that are yet to be developed.

More important is the fact that once remedial action construction is completed, lead levels of all properties—developed or undeveloped, cleaned up or not qualified—will be well below EPA's threshold of concern for lead in soils at this site. This conclusion is strongly supported by multiple lines of evidence. EPA's remedial action goals and objectives (Section 8 of the Decision Summary) were developed to assure that soil lead and arsenic levels that remain after the cleanup is completed will be more than adequately protective for residents and visitors alike, particularly children.



Adapted from Hydrometrics, Inc.
Sampled November 2001

Figure 5-7
Example of Soil Lead Concentrations
In Undeveloped Lands
(ASARCO Lamping Property)

Note: This figure will be an 11 x 17 foldout.

V. INSTITUTIONAL CONTROLS (REMEDY PROTECTION MEASURES)

COMMENTS

- **Laura and Brian Vachowski - "Proposed plan fails to properly identify anticipated institutional controls"**

The proposed plan fails to properly identify anticipated institutional controls and appears to attempt to place at least partial responsibility for developing those controls in the hands of local government. As EPA's own guidance makes clear, developing appropriate institutional controls is the EPA's responsibility, not local government's. See *Institutional Controls: A Site Manager's Guide to Identifying, Evaluating, and Selecting Institutional Controls at and RCRA Corrective Action Cleanups* (EPA 540-F-00-005, 09/2000).

- **Lewis & Clark City-County Board of Health - "The BOH . . . will only accept the responsibility of Institutional Controls as long as there is funding in place."**

Page 19 (of the Proposed Plan) - The BOH requests that the EPA state the local government will only accept the responsibility of Institutional Controls as long as there is funding in place.

- **Lewis & Clark City-County Board of Health - "The BOH has several concerns with the implementability of the institutional controls"**

The BOH has several concerns with the implementability of the institutional controls that must be addressed prior to the selection of the Final Cleanup Alternative. These concerns are listed below:

Effectiveness in Preventing Exposures - The institutional controls, common to all the cleanup alternatives (except "No Action"), play a significant role in the protection of human health in East Helena and the surrounding area. Considering the health protectiveness of the cleanup alternatives rely heavily on the effectiveness of the institutional controls, the BOH would like information regarding their anticipated effectiveness prior to the selection of the Final Cleanup Alternative. Such information should be gathered from other hazardous waste sites where the selected remedy relied heavily on institutional controls. In addition, an approach should be defined to monitor or measure the effectiveness of the institutional controls in East Helena over time. For example, will future blood lead data be the only measure of effectiveness, or will additional data, such as in-home environmental assessments, community interviews, or enforcements, also measure/monitor effectiveness?

Content - To effectively develop and implement institutional controls, the BOH requires more information regarding their content. EPA should provide a list of recommendations and ideas that have been used successfully at other hazardous waste sites, as well as operational/management ideas. In addition the BOH requests examples of the specific legal language used to establish "successful" institutional controls at other sites.

Enforceability - The BOH has concerns with enforceability of the institutional controls. Prevention of certain potential exposures does not appear to be enforceable, such as

exposures within residences (e.g., attic dust) and the long-term Best Management Practices (BMP) for agricultural areas. Prior to the selection of the Final Cleanup Alternative, EPA must provide examples of specific mechanisms to be included in the Institutional Controls for such exposures.

Funding - The City-County Health Department does not have the financial resources to develop, implement, manage, and enforce the institutional controls. As such, the BOH will accept responsibility for the institutional controls only if sufficient funding will be available.

The BOH requests that the EPA provide detailed information and justification regarding the development of the cost estimates for the institutional controls, as well as the proposed funding mechanisms. Specifically, the BOH would like to ensure the following types of services are included in the cost estimates:

- Soil sampling and analysis
 - Blood lead monitoring
 - In-home environmental assessments and contaminant abatement
 - Management of agricultural areas - the City-County Health Department does not have expertise in agricultural BMPs, nor does Lewis Clark County have a department specializing in agricultural practices.
 - Air quality monitoring to evaluate the effectiveness of the agricultural BMPs
 - Expansion of the community education programs to include families not residing in East Helena, but whose children attend school or in East Helena.
 - Free permits - EPA emphasized free permits, presumably to ensure that homeowners and landowners are not unduly burdened by the institutional controls. The permits may have a significant cost to the City-County Health Department through permit preparation, review and administration, soil testing, and in-home environmental assessments.
 - Contingencies - the cost estimates should allow for the possibility that the cost estimates will not be sufficient to adequately manage the Institutional Controls.
- **Montana Department of Environmental Quality – “The Proposed Plan did not include adequate discussion of anticipated institutional controls”**

The Proposed Plan did not include adequate discussion of anticipated institutional controls (ICs). The Proposed Plan identified Lewis and Clark County as responsible for determining necessary institutional controls. EPA has published a guidance document entitled "Institutional Controls: A Site Manager's Guide to Identifying, Evaluating, and Selecting Institutional controls at Superfund and RCRA Corrective Action Cleanups" (EPA 540-F-00-005, 09/2000). This guidance clearly defines the steps that EPA, not a county or other entity, uses to identify and evaluate the appropriate [ICs] for a site. DEQ supports the involvement of local and state governments as well as other affected parties in the ICs decision making process; however, the responsibility of identifying and evaluating potential institutional controls is EPA's, in consultation with the state, and should not be a burden unilaterally placed on the County. ICs should be considered and included in the selected remedy for the Record of Decision. ICs are a critical part of the remedy and the success of the implemented remedy where active response measures are impracticable. Please provide details of anticipated institutional controls, including information regarding costs, enforcement, implementation, funding, etc., in the Record of Decision.

Identify and evaluate potential institutional controls, as that is the responsibility of EPA, in

consultation with the state. The remedy required institutional controls for soil disturbance, proposed development, and the soils repository. The Record of Decision should include funding mechanisms, development, implementation, and enforcement of institutional controls.

- **Lewis & Clark City-County Board of Health - "Describe the "other sources" of funding"**

Page 17, 2nd column, first complete paragraph, under the 1R alternative (of the Proposed Plan) - Please describe the "other sources" of funding that may be available? Who would be responsible for securing those sources of funding?

- **Montana Department of Environmental Quality - "Include a discussion on the long-term management and institutional controls for the East Fields soil repository"**

The Record of Decision should include a discussion on the long-term management and institutional controls for the East Fields soil repository. This may include a cap, dust control, weed control, inspections, deed restrictions, groundwater monitoring.

- **Lewis & Clark City-County Board of Health - Provide more details regarding the East Fields soil repository**

Page 21, 2nd Column, Paragraph 2 (of the Proposed Plan) - Who will have the ultimate long-term responsibility for the management, operation, and monitoring of the soil repository at the East Fields? Who covers the cost of this? Will other soil repository areas be needed for the cleanup? Please provide more details regarding this topic and the area.

- **Montana Department of Public Health and Human Services - Establish ICs that prevent disturbance of contaminated soil and prevent human exposure to interior dust**

Establish institutional controls that prevent disturbances of contaminated soil that would remain in East Helena, and prevent human exposure to interior household dust during renovation or demolition of existing housing stock in East Helena. Achieving these two parts of the EPA proposed plan must have the highest possible priority. To the extent funds are available to implement and evaluate implementation of the proposed plan; these funds need to be preferentially targeted to these two components of the plan.

- **Lewis & Clark City-County Board of Health - Describe EPA's 5-Year Review**

Page 2, 2nd column, paragraph 2 (of the Proposed Plan) - Please provide a description of EPA's 5-year review. Who will perform the 5-year review? Will random sampling be conducted? Will an evaluation plan or protocol be developed and in place? How will it be determined whether the cleanup was sufficient or whether the institutional controls are working? What if problems are found?

PREFACE TO EPA'S RESPONSES TO COMMENTS PERTAINING TO INSTITUTIONAL CONTROLS

Institutional controls (ICs) for residential areas are measures necessary to provide long-term protection of the remedy and protect against exposures to residual levels of lead that were inaccessible during the cleanup. Institutional controls for undeveloped areas are also necessary. They are designed to prevent migration of contamination (e.g., wind-blown dust, indiscriminate transport by humans, etc.) from areas such as agricultural fields and provide for orderly, cost-effective means of changing the type of use (e.g., from agricultural to commercial or residential).

This preface provides a summary of the efforts pertaining to ICs that have occurred at the site over the past several years. EPA coordinated the development of institutional controls with Lewis and Clark County, the City of East Helena, and the Montana Department of Environmental Quality. Specific legal language was developed for proposed ICs during this process.

From a risk management perspective, EPA emphasizes that the cleanup levels for lead, arsenic and all other contaminants that are or were present are fully protective. Once the cleanup is complete, residents can engage in any and all activities that they would normally engage in, with minimal risk. However, because no level of cleanup can totally eliminate all of the residual contamination, and because undeveloped areas surrounding the community will continue to have elevated levels of lead for decades into the future—in many cases, in perpetuity—residents should continue to exercise good judgment and take reasonable precautions. These measures, when formalized and put into routine practice, are institutional controls.

Need for Institutional Controls

Irrespective of the selected cleanup action level, there are conditions that exist in East Helena, and the persistence of such conditions calls for long-term institutional controls:

- Lead-contaminated soils remain in place beneath clean cover soils within some residential portions of East Helena. Within the Prickly Pear floodplain, nearly all yard soils were removed to a depth of 18 to 22 inches, and replaced with clean cover soils. ICs are needed to protect against displacement of the soils left buried beneath the protective cover.*
- Despite all reasonable efforts to remove and replace lead-contaminated soils of all qualified yards, soils under decks and porches, sheds and garages, sidewalks, large trees, and other inaccessible areas cannot be removed without a significant increase in disruption to the resident. Generally, no more than 75 percent to 80 percent of the lead-contaminated soils of any single residential yard are accessible for removal and replacement. ICs are needed to periodically remind homeowners of such conditions and to ensure proper handling and disposal of soils as these residual, currently inaccessible sources may become open in the future.*
- Surface soils of approximately 2,500 to 3,000 acres of undeveloped lands surrounding East Helena have lead levels that are currently not suitable for residential use, and may or may not be suitable for recreational or commercial uses. The question of whether and when these lands may be developed cannot be answered at this time. ICs, such as best management practices are needed for the long term in order to prevent these soils from becoming a source of wind-blown contamination into residential areas. Periodic monitoring is the most effective and cost-efficient way to manage these undeveloped lands over time. As changes in land use are proposed, such as through a Subdivision Review, county zoning and planning sections are best suited to oversee and advise the development.*

- *Commercial developments in and around East Helena require soil displacement, leveling, ground preparation, etc. These areas are commonly contaminated with lead above levels that are acceptable for sale or transport to other areas of the Helena Valley. There is currently no legal mechanism, or IC, to prevent such sales or transport out of the East Helena area. Once a Record of Decision is issued, Lewis and Clark County has stated that its proposed regulations will be enacted and administered. They are designed to minimize disturbances and the indiscriminate transport of soil; however, they are neither difficult nor costly.*
- *Interior lead sources, such as dust under carpets, in heating ducts, attics, and earthen basements may present a potential for exposure when renovation or demolition is conducted. ICs, such as a simple, no cost permit system, or education requirement, or both mechanisms, will enable local government to advise the renovator in these cases. The Lead Education and Abatement Program has already incorporated interior lead sources and pathways into its routine education program. The City of East Helena has expressed a willingness to cooperate in continuing efforts to educate and administer "noninvasive" means of minimizing residents' inadvertent exposures during home remodeling or demolition.*
- *Exterior (and possibly interior) lead-based paint of older homes may peel off and re-contaminate areas previously cleaned up. Educational efforts, such as periodic reminders to homeowners to inspect their homes, followed by in-home environmental assessments conducted by health professionals (at no cost to the homeowner) have proven to be an effective IC.*

EPA emphasizes again that the conditions described above, which call for long-term education and administration of reasonable institutional controls, will persist, unchanged, whether the lead cleanup levels are set at their current levels (1,000/500 ppm), at 610 ppm, at 400 ppm, or at any lesser level. Exterior (and possibly interior) lead-based paint of older homes may peel off and re-contaminate areas previously cleaned up. Thus, selecting a lower cleanup action level will have no effect on minimizing, or reducing the need for institutional controls. The single, overarching goal for setting a cleanup action level for East Helena is that it should be protective. EPA believes that it has selected a protective level.

The Montana Department of Public Health and Human Services (MDPHHS) also acknowledges that it is impossible to remove all lead-bearing soils or dust, and has stated that the overall plan proposed by EPA is feasible and desirable. The Department's perspective is that continuation of the East Helena Lead Education and Abatement Program and establishment of other needed ICs will (a) prevent disturbances of contaminated soil that remain in East Helena and (b) prevent human exposure to interior household dust during renovation or demolition. These programs, according to MDPHHS, "must have the highest possible priority."

Lead Education and Abatement Program

A cornerstone of the ICs program for East Helena is the county-administered Lead Education and Abatement Program. It began in 1995, following an agreement between EPA and Asarco to establish and fund a program that would put local health professionals at the forefront of educating the community and advising EPA and Asarco in respect to protecting the children of East Helena from lead. The program developed rapidly into one of the more effective education and abatement programs in the United States.

In 1999, Lewis and Clark County and EPA initiated an evaluation of the Lead Education and Abatement Program. The evaluation included a community survey, an external peer-review, and a series of recommendations. The program's successes were noted, yet recommendations were made to expand the role and importance of local health professionals in managing health risks in the long term. It had become increasingly evident by 1999 that local government and local health professionals are the most logical and most qualified to develop, administer and enforce all aspects of institutional controls that would be needed both presently and in the future. Thus, a coordinated effort was initiated to develop a long-term institutional controls program, and Lewis and Clark County expressed the willingness and a strong desire to take the lead.

Development of Regulations

County officials, including the health officer, division administrator and assistant county attorney took the lead in drafting proposed regulations that would become institutional controls aimed at minimizing the redistribution of residual contaminated soils within the community. The Lewis and Clark City-County Board of Health concluded that specific authority to issue such regulations should be granted to local boards of health, statewide. Therefore, Lewis and Clark County officials took the proposed regulations to the Montana Legislature as an example of the types of regulations that are needed as institutional controls at Superfund sites across the State. EPA and MDEQ concurred. Rep. Chris Ahner, an East Helena resident, sponsored Montana House Bill No. 331, "An Act Authorizing Local Boards of Health in Montana to Adopt and Enforce Institutional Controls at Federal Superfund Sites." The bill was passed into law (50-2-116 MCA) on March 31, 1999.

Shortly thereafter, the Lewis and Clark City-County Board of Health wrote to EPA that it was their intention to utilize the statutory authority and adopt "appropriate measures to protect the remediation which has taken place in the residential areas of East Helena." The May 7, 1999, letter further urged EPA and MDEQ to complete the Record of Decision for East Helena residential soils and undeveloped lands so that the regulations could become effective for East Helena.

Over a period of about two and one-half years following, Lewis and Clark County presided over roughly monthly meetings involving EPA, MDEQ and the City of East Helena. At times, interested East Helena area residents participated. These discussions covered institutional controls that were needed to (a) protect the ongoing removal action, (b) protect the residential cleanup once it is completed, and (c) manage the long-term land use changes anticipated for undeveloped lands.

EPA has steadfastly supported the County's efforts to take the lead throughout ICs development process. The County's draft regulations are attached at the end of the Responsiveness Summary as an example of the degree to which progress on ICs has been made by the County, City, State and EPA.

EPA believes that it has provided a balance between specificity and flexibility in the identification and discussion of ICs in the alternatives. Having general language in the ICs without being too specific allows local entities the flexibility to structure ICs as needed to meet specific community needs and desires. This approach also allows local entities to use existing programs, such as the Lead and Education Abatement Program, and County Planning and County Zoning Departments, in the administration of ICs. EPA has worked closely with Lewis and Clark County and the City of East Helena, and will continue to do so throughout remedial action construction and beyond.

EPA will continue to seek adequate funding for the administration and enforcement of ICs, noting that steps have repeatedly been taken by EPA to support the County's need for funding.

EPA RESPONSES TO COMMENTS REGARDING INSTITUTIONAL CONTROLS

- *In light of Lewis and Clark County's expressed preference for taking the lead in developing ICs for East Helena, and MDEQ's participation in the extensive dialogue that occurred over the years, as explained in the Preface above, EPA believes that it has identified all types of institutional controls that apply to the site. EPA accepted the responsibility to develop ICs and worked with local government to develop them. EPA identified categories of institutional controls and provided examples of situations requiring institutional controls, which the County acted upon. Examples of ICs identified in the Proposed Plan and developed in coordination with the County as the lead include:*
 - *Continue the existing East Helena Lead Education and Abatement Program for as long as necessary*
 - *Continue blood lead screening for children*
 - *Develop and administer institutional controls that will enable the Lewis and Clark City-County Board of Health and City of East Helena to adopt and enforce regulations needed to (a) prevent displacement of contaminated soils that remain in and around East Helena, and (b) to prevent exposures to interior household dust (attics, unfinished basements, heating ducts, etc.) during remodeling or demolition, through the promotion of environmental assessments*
 - *Requirements and protocols for sampling soils prior to development of undeveloped lots or lands, to determine the extent and concentrations of lead and arsenic in soils, and after cleanup, to assure that the cleanup was effective and that development can proceed*
 - *Define requirements and specifications for land use changes, such as when undeveloped lands are proposed for residential, recreational, or commercial development*
 - *Apply Best Management Practices for agricultural land and rangeland communicated through an education program and assessed through inspections. For agricultural land, the Proposed Plan indicated that best management practices included minimum tilling practices and minimization of autumn burning and tilling to reduce the production of fugitive dust. For rangeland, the Proposed Plan primarily identified maintenance of adequate amounts of vegetative cover to control fugitive dust.*

Final language for institutional controls belongs in the hands of local government, as demonstrated by Lewis and Clark County's extensive efforts. Prior to publication of the Proposed Plan, the EPA, MDEQ, Lewis and Clark City-County, and the City of East Helena met numerous times over several years for the specific purpose of identifying ICs that would be expected to be necessary. The scope of these discussions covered the ICs for both the period during ongoing removal action, and following completion of the final remedy. It was clear to the EPA that Lewis and Clark City-County Health Department expressed a strong desire to take the lead role in both the identification and implementation of ICs. County officials took the lead and drafted proposed BOH regulations. The most recent version of the draft regulations was transmitted to the EPA RPM from Lewis and Clark City-County Board

of Health on April 11, 2006. In this letter, the Lewis and Clark City-County Board of Health indicated that the draft regulations were being provided to EPA specifically for consideration during preparation of the Proposed Plan. These draft regulations are provided in an attachment to this Responsiveness Summary.

- Information regarding specific content of institutional controls and associated legal language has been provided in the preface and in previous comments. The Proposed Plan (and the ROD) identifies the need to utilize a combination of regulatory controls and education to prevent exposures. Regulatory ICs designed to prevent exposure, such as limitations on activities where soils might be disturbed, are enforceable. In addition, effective communication with the public through education of the existence of the potential risks is a preventative measure. Specific mechanisms for preventing exposures will be identified as a component of the educational program.

EPA believes that the ICs have been explained in the Proposed Plan at an appropriate level of detail. The exact details and specific language contained within an effective ICs program, such as regulations and ordinances, are generally worked out during the Remedial Design stage of the Superfund process. In this case, draft regulations currently exist, but EPA will still be available to work with the local entities to revise specific language, if so desired, during the Remedial Design stage. The degree to which institutional controls have been developed and described is consistent with EPA guidance. The EPA guidance document, *Institutional Controls: A Site Manager's Guide to Identifying, Evaluating, and Selecting Institutional Controls at and RCRA Corrective Action Cleanups* (EPA 540-F-00-005, 09/2000) identifies the determinations that a site manager should make. These determinations are identified in the table below with the location where they are discussed in the Proposed Plan.

| Site Manager Determinations | Proposed Plan – Location of ICs |
|----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|--------------------------------------------------------------------------------------------------------------|
| Objective – clearly state what will be accomplished through the use of ICs. | Objectives of the East Helena ICs are identified in Section 4, Pages 15 and 16, and Section 7, Page 30. |
| Mechanism – Determine the specific types of ICs that can be used to meet the various remedial objectives. | The types of ICs are identified in Section 5, Pages 17, 18, 19, 24, and 25, and Section 7, Pages 30 and 31. |
| Timing – Investigate when the IC needs to be implemented and/or secured and how long it must be in place. | Timing is discussed in Section 5, Page 18, and Section 7, Pages 30, 31, and 32. |
| Responsibility – Research, discuss, and document any agreement with the proper entities on exactly who will be responsible for securing, maintaining, and enforcing the control | Responsibility is discussed in Section 5, Pages 17, 18, 19, 24, and 25, and Section 7, Pages 30, 31, and 32. |

The EPA Project Manager provided the local entities with this guidance during the collaborative development of the ICs program. The guidance was used as a benchmark on which to begin, consistent with the way in which guidance is often applied. Should greater detail be required in the future, additional regulations or ordinances may be considered when need arises. In this case, draft regulations currently exist. EPA will continue to be

available to work with local governments, if such is desired, during the Remedial Design and Remedial Action construction phases.

- *State and local governments are responsible for adopting and implementing institutional controls. EPA in the past has successfully secured funding from viable Potentially Responsible Parties for implementation and administration of ICs. EPA has successfully provided for funding through 2008 and is seeking a settlement from Asarco that will ensure long-term funding for administration and enforcement of the ICs program. However, the status of ASARCO's bankruptcy remains unclear. Therefore, EPA must consider the possibility that East Helena may become a Fund-lead site. Although unlikely, if that becomes the case, EPA can only seek funding from national sources, year-to-year, with no absolute assurance that funding will be provided. If it were to become a Fund-lead site, the State of Montana has an obligation to match or fund long-term ICs administration, particularly during operations and maintenance (O&M). The most likely scenario is that necessary funding will be secured.*

The County has considerable control over costs of the ICs program, by specifying or modifying the type of ICs. For example, EPA and the County have together periodically assessed range conditions over surrounding agricultural lands with assistance from Montana State University. The cost has been minimal, and may in fact be continued as a service to counties through the university's extension services. This simple, yet effective measure allows a qualitative evaluation of range conditions that in turn offers assurances that wind-blown erosion will not become a problem.

Detailed costs, which include institutional control costs, are provided in the main text of the ROD.

- *Identification of ICs in the Proposed Plan was based on anticipation that they would be effective based on the site-specific needs for East Helena, and experience at other hazardous waste sites. Providing comprehensive case histories of ICs at other sites may be misleading, because effectiveness is a function of how well the local entity implements, administers, and enforces the ICs.*

Effectiveness of the ICs will be monitored because the site is subject to Five-Year Reviews. Five-Year Reviews are required because the remedy does not allow for unlimited use. These reviews are conducted by EPA no less frequently than every five years to assess the effectiveness of the remedy, and can include both record reviews and on-site inspections. More frequent reviews can be conducted at the discretion of the entities responsible for the ICs. The measure of effectiveness could include such things as determinations of whether the proper permits have been obtained and procedures have been followed during the development of agricultural land. The frequency and content of reviews can be determined during the Remedial Design stage after the remedy has been selected in the Record of Decision, but will be no less than every five years.

- *As stated in the Proposed Plan, it is anticipated that a small portion of the East Fields will continue to be used as a repository. Further cleanup of this area is therefore not planned. The East Fields currently support vegetation and the level of lead contamination in soil disposed in the East Fields in the future is anticipated to allow vegetative cover to continue to thrive. As stated in the Proposed Plan, the long-term management of the East Field repository requires institutional controls, which in this case include Best Management Practices to maintain vegetative cover to minimize generation of fugitive dust. The State of*

Montana and Lewis & Clark County will manage the institutional controls and have long-term responsibility for them. EPA negotiates with the designated Responsible Parties on cost recovery. Ultimately, the State of Montana has responsibility for sharing costs. No other soil repository areas are necessary for cleanup.

It is conceivable that some new industrial or commercial or recreational use may fit the circumstances present in the East Fields, leaving a small portion of them open for future disposal of small amounts of waste soil.

- The Preferred Cleanup Alternative in the Proposed Plan includes institutional controls that will enable the Lewis and Clark City-County Board of Health and City of East Helena to adopt and enforce regulations needed to (a) prevent displacement of contaminated soils that remain in and around East Helena and (b) to prevent exposures to interior household dust (attics, unfinished basements, heating ducts, etc.) during remodeling or demolition, through the promotion of environmental assessments. The ICs identified in the Proposed Plan specifically include continuation of the existing East Helena Lead Education and Abatement Program for as long as necessary. The program promotes environmental assessments in homes, including sampling of yard soil, interior dust, drinking water, and lead-based paint in order to identify all sources of and pathways for lead exposure. The program provides broad-based education to the public, in homes, day-care centers and schools. Education efforts are focused on nutrition, personal hygiene, health monitoring (blood lead testing) of area children, "safe play" practices, and risk reduction and management. The program provides information to area residents on the need to avoid areas with elevated soil or dust lead levels and to maintain barriers inside and outside the house. It provides information to future purchasers and sellers of property, lending institutions, and realtors regarding both site-wide and individual property-specific conditions.*
- The Comprehensive Five-Year Review Guidance, OSWER Directive 9355.7-03B-P, dated June 2001, is intended to promote consistent implementation of the Five-Year Review process. Section 121 of CERCLA, as amended by SARA, requires that remedial actions, which result in any hazardous substances, pollutants, or contaminants remaining at the site, be subject to a Five-Year Review. The NCP further provides that remedial actions which result in any hazardous substances, pollutants, or contaminants remaining at the site above levels that allow for unlimited use and unrestricted exposure be reviewed every five years to ensure continued protection of human health and the environment.*

The Five-Year Review requirement applies, subject to the conditions mentioned above, to all remedial actions selected under CERCLA §121, including institutional controls. Consistent with Executive Order 12580, other Federal agencies are responsible for ensuring that Five-Year Reviews are conducted at sites where Five-Year Reviews are required or appropriate.

EPA Region 8 is responsible for completing the Five-Year Reviews for East Helena. Two Five-Year Reviews have been conducted to date for the East Helena Superfund Site; the second Five-Year Review was completed on March 31, 2006. The Five-Year Review includes several components, such as site background, response actions, progress since last review, community involvement, site inspections, and technical assessments.

The East Helena site requires ongoing Five-Year Reviews in accordance with CERCLA § 121 (c). The next Five-Year Review for the East Helena Site will be performed by January 2011, five years from the date of the second 5-year review in 2006. The remedy elements that are part of OU2 will be part of that Five-Year Review, including institutional controls as

previously mentioned, provided the ROD has been signed.

VI. LEAD CLEANUP LEVELS AND PROTECTIVENESS OF HUMAN HEALTH

COMMENTS

Jeri Dwan – “Use a Lower Cleanup Level” Title or lower case - global

It seems to me that it may be more protective to use a lower cleanup level to ensure that these children are protected. This is particularly true given that the Lead Abatement Program is not necessarily accomplishing all that it attempts to. While the program seems like a great idea, it wouldn't need to be relied on to such an extent if more cleanup work was done. I encourage EPA to use a lower cleanup level and ensure protection of the children of East Helena.

Lewis & Clark City-County Board of Health - Develop alternatives to remediate lead and arsenic contamination to health protective levels

... the BOH believes the Preferred Cleanup Alternative relies too heavily on institutional controls, including community education, which, in turn, minimizes the alternative's long-term effectiveness and permanence. Because institutional controls play a very significant role in the Preferred Cleanup Alternative, the BOH believes it will necessitate in-perpetuity blood lead monitoring of the children of East Helena. In addition, contamination will remain at undeveloped lands (until the land use is changed) requiring the City-County Health Department and other local government entities to oversee these undeveloped lands and their potential, future remedial actions.

It is the opinion of the BOH that additional alternatives should be developed and evaluated that will focus on the Reduction of Toxicity, Mobility, or Volume of Contaminants through Treatment and, thereby, maximize the Long-Term Effectiveness and Permanence of the remedy.

Specifically, the BOH requests that alternatives be developed and evaluated with the goal of fully remediating the lead and arsenic contamination in East Helena to health protective levels that would minimize the complexity and longevity of the institutional controls.

Moriah Bucy - “More emphasis must be placed on the risks to the people”

I think that more emphasis must be placed on the risks to the people (specifically the children) of the community and ensuring that the cleanup is done correctly the first time. ... I hope that EPA will choose to do the right thing and make sure that the people of East Helena are adequately protected.

Moriah Bucy - “Lower cleanup level advocated”

The lead model resulted in a risk-based cleanup level of 520 ppm lead in soils. It appears that EPA is completely disregarding the model in choosing a preferred remedy that has a "trigger" value of 1,000 ppm. If EPA feels it is important to cleanup soils to 500 ppm in soils that are "triggered" by a 1,000 ppm concentration, then why not use a "trigger" of something closer to 500 ppm in the first place?

Montana Department of Environmental Quality – “Reduce reliance on education”

DEQ agrees that the Lead Program has been strong and effective with its outreach and education in helping to reduce exposure to lead and arsenic in the past, and acknowledges that it should continue in the future. However, reducing children's exposure to soils where lead levels remain above the RBC relies on the parent's knowledge and intervention actions. The proposed plan discussed the possibility of "lower awareness of residents, who may revert to behaviors that increase the risks from the remaining lead and arsenic." This possibility exists even with the Lead Education and Abatement Program. Remediating residential soils to the risk-based lead cleanup levels is more protective and effective and has more long-term permanence. Thus, DEQ supports the more protective alternative of removing yard soils with soil lead levels greater than the RBC, thereby eliminating the unacceptable soil exposure pathway. DEQ proposes the remedial action objective should be to remediate residential yard soils to risk-based lead levels that reduce children's lead exposure. This will reduce the reliance on education.

Christine Deveny, Vice Chair, Lewis Clark City-County Board of Health, and Melanie Reynolds, M.P.H., Health Officer, Lewis and Clark City-County Health Dept. – “Preferred cleanup relies too heavily on institutional controls”

The BOH has concerns regarding the long-term protectiveness of the preferred cleanup alternative and believes it relies too heavily on institutional controls like community education and blood lead testing. Clearly, an education and testing program would always be subject to adequate funding levels, advocate support, and changing political priorities. Our preference is for a remedy that would eliminate, or at least substantially reduce, the need for perpetual oversight, monitoring, education and intervention. We believe lower cleanup levels may achieve that objective.

EPA RESPONSES PERTAINING TO LEAD CLEANUP LEVELS AND PROTECTIVENESS OF HUMAN HEALTH

The cleanup levels for lead and arsenic in soil are protective for children and adults. Reduction of risks for young children was the highest priority for EPA, and those risks have been reduced significantly. Residents and visitors can engage in all activities that they would normally engage in, with minimal risk and with taking only reasonable precautions.

A range of cleanup levels was developed based on a risk assessment, which included both a screening level point estimate and a quantitative uncertainty analysis using the IEUBK model. Multiple criteria formed the basis of the remedial decision when selecting a final cleanup level within that plausible range. These criteria included the quality and quantity of the environmental data collected, the quality and quantity of the biological data collected, the representativeness of the default and/or site-specific assumptions used in the risk assessment, and the most current scientific studies available. The cleanup levels for lead and arsenic were developed using the risk assessment process recommended by existing EPA guidance documents. The cleanup levels are within the range of cleanup levels selected for lead and arsenic at other mining and smelting sites in Region 8.

Responses to Category I, Children's Blood Lead Test Results, discuss and explain why the East Helena blood level data are reliable for drawing conclusions about the site, how the data and associated statistics show the lack of any meaningful correlation between soil lead data and blood lead data at the concentrations of soil lead remaining in East Helena, and how the data

show that the cleanup levels are protective. The data also refute the presumption that a lower cleanup action level may further reduce blood lead levels of East Helena's children. EPA's responses to Category II, East Helena's Role in Development of National Lead Guidance, discuss why the use of blood lead data is consistent with guidance.

The risk-based cleanup levels for lead in soil are protective for all residents of East Helena, particularly for the most susceptible: children. The concept that a lower cleanup action level "may be more protective," appears to have arisen from an assumption that soils with lead above about 800 to 1,000 ppm are unsafe, yet soils less than about 520 to 600 ppm are safe. However, there are no empirical data to support that assumption. In fact, numerous lines of empirical evidence gathered over many years, involving over 1,700 East Helena children, thousands of soil samples, decades of air quality data, and results of several hundred in-home environmental assessments conducted by qualified health professionals, all lead to the conclusion that the cleanup levels are protective, and that several other factors besides soil, including lead in paint, family hobbies, father's occupation, and an air pathway that disappeared when the smelter closed down, were more important to interrupt than the soil pathway.

Cleaning up soils to a level of 500 ppm, when the trigger is exceeded does not imply that EPA believes lead levels above 500 ppm are of concern. If a yard cleanup is triggered, the goal is to reduce the concentration to a level that is well-removed from the trigger—and therefore protective--and reasonably cost-effective. This provides an extra margin of safety in the cleanup, but also is within the realm of reasonableness in terms of cost. EPA has presented ample evidence that the trigger level for East Helena is well below the level of concern for lead in soil and therefore protective.

EPA emphasizes again that the conditions described above, which call for long-term education and administration of reasonable ICs, will persist, unchanged, whether the lead cleanup levels are set at their current levels (1,000/500 ppm), at 610 ppm, at 400 ppm, or at any lesser level. Exterior (and possibly interior) lead-based paint of older homes may peel off and re-contaminate areas previously cleaned up. Because of this, and because the 1,000/500 ppm cleanup level for lead and 176 ppm for arsenic are fully protective, more stringent ICs would be contrary to other EPA guidance and possibly[Scott, I will check] the National Contingency Plan. Thus, selecting a lower cleanup action level will have no effect on minimizing or reducing the potential need for ICs. The single, overarching objective for setting a cleanup action level for East Helena is that it should be protective. EPA has accomplished that objective.

As discussed in Category I above, it is unlikely that the low blood lead levels observed in East Helena are due to public education and awareness. Previous study results suggest that awareness of lead hazards may result in temporary changes in behavior which reduce exposure to lead hazards and blood lead levels, but the changes are not long term. Although the current program of lead education is valuable in providing citizens with knowledge they may utilize to minimize risk from lead exposure, EPA does not believe that this program could be responsible for modifying behaviors to the extent that it could account for the steadily decreasing trend in blood lead levels over the last 15 years, and for the consistent low levels remaining over the last several years.

Regardless of the cleanup level, some lead-bearing soil will always remain, as the Montana Department of Public Health and Human Services and the U.S. Agency for Toxic Substances and Disease Registry have also acknowledged (see attached). Can I reference this earlier? Even if the cleanup level was set at a natural, background lead concentration, conditions would exist that require long-term institutional controls. The State's Medical Officer agrees with EPA in

concluding that continuation of the East Helena Lead Education and Abatement Program and establishment of other needed ICs will (a) prevent disturbances of contaminated soil that remain in East Helena and (b) prevent human exposure to interior household dust during renovation or demolition. These programs, according to MDPHHS, "must have the highest possible priority."

Continuing education is highly desirable to parents and educators in this community. The Lead Education and Abatement Program should continue for that reason, but the program also should continue for the reason that, regardless of the cleanup action level, institutional controls will be necessary in the community and the program is best suited and qualified to administer, or act as liaison or coordinator for, institutional controls both presently and in the future.

VII. UNDEVELOPED LANDS AND FUTURE CHANGES IN LAND USE

COMMENTS

- **Laura and Brian Vachowski – Landowners should not bear cleanup costs**

The proposed plan states that "landowners seeking to change the use of undeveloped land . . . will bear all associated cleanup costs." Such a requirement flies in the face of both CERCLA and EPA's own internal guidance. Under CERCLA, innocent landowners such as ourselves, bona fide prospective purchasers, and contiguous property owners are conditionally exempt from any cleanup costs associated with contamination in Superfund sites. Moreover, the EPA Superfund Lead-Contaminated Residential Sites Handbook (August 2003) plainly states, "EPA ... generally will not take CERCLA enforcement actions against an owner of residential property unless the residential homeowner's activities lead to a release or threat of release of hazardous substances resulting in the taking of a response action at a site." See Handbook at pg. 62. EPA's proposed plan essentially constitutes an enforcement action against residential landowners and attempts to circumvent both the spirit and black letter law of CERCLA, as well as the EPA's own guidance, by trying to hold residents liable for the cleanup of contaminated areas. Such an attempt is not only inappropriate, but likely illegal.

- **Montana Department of Environmental Quality – Landowners should not bear cleanup costs**

The proposed plan states, "Developers or landowners... will bear all associated cleanup costs." The selected remedy should not state that developers and landowners will pay for remediation. Certainly developers and landowners could work out an agreeable arrangement with the Potentially Responsible Parties (PRPs) but specifically identifying liability of developers and landowners is not a component of the remedy. Allocating liability is not part of the remedy; the liability should remain with the PRPs. The Proposed Plan also states, "Undeveloped lands are being developed, and proposed for development, in the vicinity of East Helena." The Record of Decision addresses that anticipated land use. The Lead Sites Handbook states that EPA generally will not take CERCLA enforcement actions against an owner of residential property. In addition, the Handbook notes that landowners may qualify under CERCLA for protection from CERCLA liability as a contiguous property owner, bona fide prospective purchaser, or innocent landowner.

- **Montana Department of Environmental Quality**

Remove the requirement that CERCLA liability shifts the responsible parties to the property owners and developers.

- **Lewis & Clark City-County Board of Health – Undeveloped land cleanup cost responsibility**

The Proposed Plan indicates (p. 25) that developers or landowners that wish to change the use of undeveloped lands must meet all the requirements and specifications for the new use and will bear all associated cleanup costs. This element of the Preferred Cleanup Alternative could have significant economic impacts to the community of East Helena. Therefore, the EPA should provide justification for transferring the cost of cleanup of undeveloped lands from the PRP to the landowner and/or developer. EPA should also provide a legal analysis regarding liability under the Comprehensive, Environmental Response, Compensation and Liability Act (CERCLA) describing how the liability is transferred from the PRP to the landowner/developer.

- **Moriah Bucy - Cleanup cost responsibility**

The idea that landowners who currently have undeveloped land should be responsible for paying cleanup costs should they decide to develop the property is outrageous. Not only that, but those who currently have a home on property that may later be subdivided may end up in a situation of having to cleanup their undeveloped property to a more stringent level than where they currently live. Again, this brings up the issue of the cleanup level. If EPA feels that 500 ppm is protective for future development, then why should those of us who live in the East Helena be less important?

- **Montana Department of Environmental Quality - "Include total estimated costs for the undeveloped lands"**

The proposed plan provided "total costs" in the estimates for cleanup of the railroad right-of-way and water conveying ditches but not for the undeveloped lands. The Record of Decision should include total estimated costs for the undeveloped lands.

- **Laura and Brian Vachowski – "Proposed plan fails to include any cost estimate for future development of undeveloped residential areas"**

The proposed plan fails to include any cost estimate for future development of undeveloped residential areas similar to our property.

- **Lewis & Clark City-County Board of Health – "Will undeveloped lands be monitored only through institutional controls"**

Page 1, 1st paragraph 3 (of the Proposed Plan) -The proposed plan applies only to existing residential soils and offers recommendations only for undeveloped lands. Will undeveloped lands be monitored only through institutional controls after the Record of Decision (ROD) is approved?

- **Lewis & Clark City-County Board of Health – "Deep tillage should not be presented as a treatment remedy"**

The BOH has concerns with the implementability of the deep tillage remedy for undeveloped lands proposed under the Preferred Cleanup Alternative. These concerns must be addressed prior to the selection of the Final Cleanup Alternative. These concerns are listed below:

In Place Treatment - deep tillage should not be presented as a treatment remedy, nor is it an innovative technology (it has been used on sites for many years, and was included as an option for undeveloped lands in East Helena more than 16 years ago; Hydrometrics 1991). Deep tillage dilutes the contaminant concentration in the surface soil through mixing with deeper soil. Further, EPA's characterization of the "reductions" in lead concentrations are misleading, as the Proposed Plan does not point out that the total mass of contaminant in the subsurface is not lessened by tilling.

Mobilization - deep tillage may mobilize contaminants to concentrate in other, deeper strata at levels even greater than were found in the target shallow zone. The BOH believes the EPA should provide a more detailed assessment of the mobilization potential associated with this remedy.

Rocky geology - rock out-croppings in the surface and near surface geology may prevent effective deep tillage of soils. In a treatability plot performed in the Asarco West Field, the maximum attainable tillage depth was 20 inches even with prior field preparation using a dozer to rip to 15 inches below ground surface (Hydrometrics, 1997). The desired tillage depth for the treatability plot was 30 inches. Considering that numerous subsurface rocks will likely be encountered in many locations, the BOH believes the EPA must provide an alternate remedy for such locations conditions.

Increased soil volume -deep tillage will likely increase the volume of soil as "loose" soil volumes are typically significantly greater than "compact" soil volumes. The Preferred Cleanup Alternative must consider options for the increased soil volume, particularly if the approach is not successful in achieving the lead and arsenic cleanup levels.

Weed management -disturbance of soil through deep tillage may cause weed infestation problems. Weed management practices and funding should be considered for the Preferred Cleanup Alternative.

- **Montana Department of Environmental Quality – "EPA Handbook explains that tilling is not an acceptable cleanup method for lead soils because it is not protective"**

One of the alternatives for undeveloped lands in the proposed plan is Place Treatment (or tilling). The EPA Lead Sites Handbook explains that tilling is not an acceptable cleanup method for lead soils because it is not a protective remedy. This is because no lead removal occurs, and adequate mixing of soil is difficult, if not impossible, to achieve. The handbook further states that tilling may increase the volume of soil, which ultimately requires remediation. *The Record of Decision needs to be more precise in its discussion of tilling as a remedy.*

DEQ agrees that in limited site-specific situations, such as non-residential surgical contamination, tilling may be appropriate; however, tilling failed in the Uttick Subdivision in East Helena. After much effort and numerous tilling passes and subsequent sampling, most soils still contained lead above the negotiated cleanup level and had to be excavated and replaced. This was due to the deposits in the flood channels, which had much higher contaminant levels. The adjacent Fields would likely also not be amenable to tilling due to

similar fluvial deposits. Also, the rocky sub-soils in the undeveloped land surrounding East Helena may make deep tilling difficult to implement.

The Record of Decision needs to define the sampling protocols and the decision criteria for suitability of tilling.

- **Laura and Brian Vachowski – “Capping undeveloped property is not a feasible final remedy”**

Capping undeveloped property is not a feasible final remedy and should not have been included as if it were one. Any cap put in place will only be disturbed when development occurs. At the most, capping is a temporary, remedy.

EPA RESPONSES PERTAINING TO UNDEVELOPED LANDS AND FUTURE CHANGES IN LAND USAGE

Cost responsibility

The proposed plan makes it possible for developers to bear the cost of development, but does not make it mandatory. In fact, this provision was included after consulting with local landowners and developers, who were concerned that Asarco's bankruptcy might languish for years, or worse, leave Asarco unable to cover any such remedial costs. Given affordable means of preparing undeveloped land for residential use, as is provided for by the proposed plan's preferred remedy, developers and landowners have some control over their own investments.

This provision does not necessarily excuse Asarco from liability. Should Asarco come out of the bankruptcy proceeding intact, as anticipated, EPA will seek to receive a settlement on behalf of private landowners whose lands have been impacted by the smelter's operations. Nevertheless, it is also possible that Asarco's liabilities will be capped, nationally, thus leaving EPA with little choice but to enable private landowners or developers to bear some or all of the costs that might be required to bring undeveloped lands into conformance with a new use. The precedent for such circumstances has already been set at other Superfund sites. The provision is consistent with both policy and law. It enables landowners and recognizes the reality of a prolonged, complex and uncertain bankruptcy proceeding.

The Superfund Lead-Contaminated Residential Sites Handbook (EPA 2003) (Handbook) states, "However, it is not the intent of EPA to clean up tracts of remote, undeveloped, lead-contaminated land that may be developed into residential lots in the future. This clean-up responsibility should be borne by the land developer. Institutional controls should be developed to ensure safe development in these areas, since under CERCLA developers could be held liable for improper cleanup." In addition, OSWER Directive 9355.7-04 states, "If landowners or others decide at a future date to change the land use in such a way that makes further cleanup necessary to ensure protectiveness, CERCLA does not prevent them from conducting such a cleanup as long as protectiveness of the remedy is not compromised. In general, EPA would not expect to become involved actively in the conduct or oversight of such cleanups." The Proposed Plan includes cost estimates for alternatives associated with undeveloped land.

- *The Proposed Plan applies to both existing residential areas and undeveloped lands. However, EPA presented a separate preferred remedial alternative for each property type. Whereas the preferred remedial alternative for residential properties is removal and replacement, if the property requires it, the preferred remedial alternative for undeveloped*

lands is dependent upon the new, proposed use. If the new use is residential, and the undeveloped lands do not already conform to the requirements of that new use, then in place treatment is the preferred remedial method. Other uses, such as commercial or recreational uses, may not require anything more than land preparation such as leveling or paving, or a cap of topsoil and sod.

- *Undeveloped lands will be monitored, as needed, after the Record of Decision. Undeveloped lands do not currently present unacceptable risks to nearby residential areas, or to occasional users or to agricultural workers. Practical application of institutional controls is already being done and the County has processes in place to cover changes in land use. Five-year Reviews are conducted by EPA no less frequently than every five years to assess the effectiveness of the remedy, and can include both record reviews and on-site inspections. More frequent reviews can be conducted at the discretion of the entities responsible for the ICs, although EPA does not see a need for that.*

In-place treatment (deep tillage and amendment)

- *Deep tillage with lime or other suitable chemical amendment is recognized as a treatment technology. This method has been successfully used at other sites, as well as East Helena.*

Deep tilling with the use of a modified Baker plow was evaluated at East Helena. This plow is a large disc implement used in agriculture for the deep tilling of soils. Use of the Baker plow in the East Fields area demonstrated the following:

- *Lead concentrations in surface soils were reduced to safe levels*
- *Subsurface soil lead concentrations were increased slightly to moderately, yet not to levels of concern*
- *Soil pH was raised, thus reducing bioavailability of lead*
- *Mixing of the soil profile in the plow zone significantly reduced the metals/pH gradient*

The method described as being inappropriate in EPA's Handbook is rototilling. Rototilling is a shallow soil tilling method that does not amend the soil profile. Deep tillage is widely recognized as a treatment technology throughout the western United States. Many reclamation scientists—perhaps the majority—consider in place treatment of soils for metals amelioration as an innovative technology. They note further that the technology has undergone significant improvement in terms of equipment, application and effectiveness in the past decade. Indeed, the State of Montana plans to employ this technology on a massive scale in the Clark Fork River floodplain.

The deep-plow mixing technology was successfully used in 1995-1996 to reduce contamination in surface soils of a 40-acre agricultural tract on the outskirts of East Helena. Before treatment, surface lead concentrations were as high as 2,800 ppm and averaged 1,500 ppm. After treatment, the highest surface soil lead concentration was 550 ppm (2 of 40 tests were slightly greater than 500 ppm) and the field average was slightly less than 400 ppm lead. Depth of incorporation of lead into the soil profile did not cause lead to exceed 150 to 250 ppm below 10 to 12 inches beneath the surface. The cost of remediation was a fraction of what removal and replacement would have cost. And, importantly the environmental impact to another 40 acres or more of farmlands in the Helena Valley, which otherwise would have required strip mining of topsoil, was avoided. A new school and about 120 homes and apartments were built shortly after the land was treated and groomed.

EPA is unaware of studies that suggest that deep tillage may mobilize contaminants to deeper strata to the extent that concentrations of contaminants are greater than those found in the target shallow zone. Deep tillage may redistribute contaminants, but experience and studies have shown that the redistributed concentrations are less than the pre-till surface concentrations.

The desired tillage depth is partly dependent on the level of contamination, the distribution of contamination in the vertical soil profile, and on the composition of the site soils. The desired end use of land is also an important factor. Deep tillage with chemical amendments is a suitable and effective alternative for undeveloped lands that, once they are characterized and evaluated in terms of their ability to meet post-treatment criteria, demonstrate that in place treatment is likely to be successful. Post-sampling results after tilling will be available to assess the success of tilling. In East Helena's Utick Subdivision, where deep tillage was demonstrated, a small percentage of the total area treated did not meet post-treatment criteria. Inadequate depth of tillage appeared to be the cause, and those areas were excavated and replaced with fresh backfill soil.

In the case of the Utick Subdivision, it is important to note that (a) post-treatment sampling revealed that criteria were not met, (b) the problem was readily corrected, and (c) the cost associated with preparing this 7-acre field for residential development was substantially less, despite having to perform partial removal and replacement, than if the area had undergone total removal and replacement. Within two to three years after the Utick Subdivision was treated, the area was fully developed with affordable homes for low-income families.

In areas where tilling does not appear likely to be successful or to be feasible, other alternatives such as capping and excavation, which are identified in the Proposed Plan, can be considered by landowners and developers contemplating changes in land use that would require a remedial action.

The potential increase in soil volume would only need to be considered if the soil was excavated. Deep-tilling does not significantly increase the soil volume for soil that remains in place. The elevation of the land will remain essentially unchanged from before tilling to after tilling.

Sites that are deep tilled are planned for further development. Therefore, the tilled area would reasonably be expected to be landscaped or built upon, which indirectly addresses weed management. In any case, imported soil (following removal) presents just as many challenges for controlling weeds as any other soil disturbance.

- EPA agrees with MDEQ regarding sampling protocols and decision criteria; however, final protocols and criteria may not be fully developed until remedial design. Whether to specify sampling protocols and decision criteria is left to the local entities. Existing methods for predicting success and for determining depth of tillage, lime application rates, etc., are well developed for East Helena largely because of the lessons learned from site-specific applications of the technology and demonstration projects discussed above. Ultimately, the results of sampling and remediation, whether by treatment with tilling and amendments or by other means, will need to meet the remedial action objectives for the site that have been identified in the Record of Decision.*
- Capping has been used at numerous metal-contaminated sites including Anaconda and Butte. The ROD for the Butte Priority Soils Operable Unit (BPSOU) includes engineered covers*

(soil with vegetation) or other covers to address solid media in non-residential areas including commercial areas and open areas where concentrations of lead or arsenic may exceed action levels. Capping (covers) has been used successfully at other sites for creating open space parks where more expensive alternatives would have prevented remediation of the site. The handbook (EPA, 2003) recommends capping in residential settings as an effective, affordable method of remediation of lead-impacted soils. Capping is a viable remedy at East Helena for undeveloped land under certain situations as described in the Proposed Plan.

VIII. SELECTION OF REMEDIAL ALTERNATIVES

COMMENTS

- **Steven D. Helgerson, MD, MPH, State Medical Officer, Montana Department of Public Health and Human Services – “Protecting the public’s health with regard to exposure to lead”**

I am writing in response to “Plans for a final cleanup of East Helena’s residential soils and undeveloped lands” which EPA announced in January 2007 for the East Helena Superfund site (Operable Unit No. 2). My comments concern the parts of the plan that, in my view, are the most important for protecting the public’s health with regard to exposure to lead.

While it would be ideal to eliminate lead and other heavy metals from areas both exterior (e.g., soil) and interior (e.g., dust or old paint) to living units, it is not feasible to achieve this ideal. In contrast, the plan proposed by the EPA appears to be feasible. The plan included cleanup of a residential yard in which any quadrant has soil with lead concentration exceeding 1000 ppm. Cleanup in those yards would include all areas with lead concentrations exceeding 500 ppm.

I agree this reduction in soil lead concentration is desirable. However, because it is impossible to remove all lead-bearing soils, there will continue to be a risk of ambient exposure in people’s living environments from contaminated dust (not to mention lead-based paint), and continuing efforts to minimize those exposures will be important. As long as any lead concentration is detectable in interior dust, the following parts of the EPA proposed plan are essential for protecting the public health:

- A. Continue the existing East Helena Lead Education and Abatement Program, and
- B. Establish institutional controls that prevent disturbances of contaminated soil that would remain in East Helena, and prevent human exposure to interior household dust during renovation or demolition of existing housing stock in East Helena.

Achieving these parts of the EPA proposed plan must have the highest possible priority. To the extent funds are available to implement and evaluate implementation of the proposed plan; these funds need to be preferentially targeted to these components of the plan.

- **City Council of East Helena - Unanimous in Support of Alternative 2R**

The City Council of East Helena has been involved in its area’s Superfund Cleanup since inception. The City Council wants to be on the record as having unanimously voted in

support of Alternative 2R of the Proposed Record of Decision by the EPA.

It is our belief that the blood lead studies show that the clean up program has been a success. The children in East Helena have lower blood levels than the national average. When the program started, the action plan was to clean a yard if any quadrant contained lead levels in excess of 1000 ppm. This action level has remained to date. The information provided during the public meeting in East Helena on January 25, 2007, clearly demonstrates that no benefit would be gained by changing that action level.

... It is the City Council's belief that yard cleanup at the existing action level in conjunction with the Lead Education Program appears to be the reason the program has been such a success. The evidence just doesn't support changing that action level when there is no expectation of blood level improvement. Nor does it support the expenditure of many more thousands of dollars.

The City Council is hopeful you will choose Alternative 2R of the Proposed Record of Decision. It is time for the superfund status of the City of East Helena to come to an end and allow us to look forward to the future.

- **East Helena Public Schools - Support for Finalization of the ROD**

Joe Cohenour, Chairman
Marcia Ellermeyer, Vice-Chair
Mark Diehl, Trustee
Don Hoffman, Trustee
Kit Johnson, Trustee
Ann Marie Thompson, Trustee

The East Helena Public Schools (EHPS) Board of Trustees would like to express their support for the finalization of the EPA Record of Decision (ROD). We believe that the ROD is an essential element to the continued well being of our community, its citizens and our children. We believe that the scientific evidence that has been examined by experts in the field has sufficient credibility to support the finalization of this decision. Realizing that this evidence has been examined extensively we now request that the plan be completed quickly for the well being of our community.

The EHPS Board of Trustees strongly supports the ideals of protection of human health and the environment. As a board we believe that the continued support of the EPA, DEQ, Lewis & Clark County officials and the Asarco Corporation will create an umbrella of oversight that guarantees the continued good health of our community from unforeseen challenges.

- **Montana Department of Environmental Quality – Supports selected components of the preferred alternative**

DEQ supports the following components of the Preferred Alternative:

- Continuing the existing East Helena Lead Education and Abatement (Lead Program) for as long as necessary to help reduce children's exposure to lead.
- Completing cleanup of streets, alleys, road aprons, irrigation ditches and railroad right-of-way that are adjacent to or within residential areas.
- Establishing institutional controls to prevent disturbance of soils, prevent exposure to

interior dust, and to define land use changes.

- **Chris Anderson, East Helena Resident – Supports “the two-year plan”**

I’d like to show my support for the Record of Decision and the two-year plan.

- **Baker Botts LLP, representing ASARCO LLP - Adopt Alternative 2R for residential settings and Alternative 4U for future development of undeveloped lands**

("ASARCO") submits the following comments regarding the United States Environmental Protection Agency's ("EPA's") Proposed Plan for soil in Operable Unit 2 of the East Helena Super Fund Site ("Proposed Plan"). As outlined in more detail below, ASARCO generally supports EPA's selected cleanup alternatives both for residential and undeveloped areas.

Residential Soils

- Alternative 2R is an effective choice for addressing residential soils.
- ASARCO agrees with EPA's selection of Alternative 2R to address residential soils in East Helena. As noted in the EPA's announcement of the Proposed Plan (the "Announcement"), Alternative 2R consists of completing the residential soil cleanup according to protocols that are currently in place for the ongoing removal action." Implementation of these protocols has significantly lowered children's blood-lead levels in East Helena.
- Alternative 2R is superior to Alternative 3R as the most cost-effective alternative.
- In Choosing removal alternatives: EPA must select a remedy that is consistent with CERCLA and the nine National Contingency Plan (NCP) criteria. Of the nine criteria, two are viewed as threshold criteria—protection of human health and the environment and compliance with applicable or appropriate and relevant requirements (“ARARs”). ...Alternatives that meet these threshold criteria are to be compared to one another based upon the remaining seven criteria. As noted by EPA, Alternative 2R and 3R are functionally equivalent as to the threshold criteria. ... Of the remaining seven criteria, cost-effectiveness is the one that most distinguished Alternative 2R from Alternative 3R.
- EPA estimates that Alternative 3R will be almost four times as expensive to implement as Alternative 2R - \$38 million versus \$10 million. As previously noted, Alternative 3R does not provide any comparative advantage as to protection of human health and the environment or compliance with ARARs. Accordingly, this cost discrepancy alone is enough to warrant adoption of Alternative 2R as the appreciably more cost-effective remedy.
- The selection of the most cost-effective remedy among various options - all being generally equivalent in terms of protection of public health and the environment, has long been a central tenet of CERCLA. ...
- ASARCO believes that selection of Alternative 2R is on all fours with the requirements of CERCLA and the NCP.
- Community acceptance strongly favors adopting Alternative 2R instead of Alternative 3R.
- As noted by EPA, key constituencies including the East Helena City Council and the Lewis and Clark City-County Board of Health have expressed support for Alternative 2R. ... As a member of the East Helena community, ASARCO supports the adoption of Alternative 2R. Moreover, judging by the comments made by various citizens in public meetings concerning the adoption of this Proposed Plan, the vast majority of local citizens in East Helena support the adoption of Alternative 2R. Indeed, many of the

vociferous objections voiced at these meetings were from citizens concerned that EPA would implement Alternative 3R and needlessly inconvenience the people in East Helena with an unnecessary program of more extensive remediation.

Undeveloped Land

- For the same reasons outlined above, ASARCO agrees with EPA's selection of Alternative 4U to address undeveloped lands in East Helena.

Conclusion

- In light of the foregoing, ASARCO respectfully urges that EPA formally adopt Alternative 2R as the preferred alternative for residential soils and Alternative 4U as the preferred alternative for undeveloped land at the East Helena Site. We appreciate the opportunity to submit these comments and would welcome a chance to discuss these alternatives with EPA at a convenient time.
- **Christine Deveny, Vice Chair, Lewis Clark City-County Board of Health; Melanie Reynolds, M.P.H., Health Officer, Lewis and Clark City-County Health Dept. – "EPA has not substantiated the rationale for selection of the Preferred Cleanup Alternative"**

Our review of the Proposed Plan and numerous supporting documents, including epidemiological and toxicological studies as well as EPA guidance and reports from other similar projects at listed National Priorities List (NPL) sites, has convinced us that EPA has not substantiated the rationale for selection of the Preferred Cleanup Alternative. Our reasons ... are generally based on a lack of supporting documentation, inconsistency with EPA guidance, and the use of uncertain assumptions by EPA to document contaminant exposure potential and predicted health risks.

- **Lewis & Clark City-County Board of Health – "Range of alternatives for residential soils was too limited"**

The BOH does not believe a sufficient number of cleanup alternatives were developed in the Proposed Plan. In particular, the range of alternatives for residential soils was too limited. The Proposed Plan does not:

- Describe the other remedial alternatives that were considered and dismissed from consideration; or
- Provide rationale for why protective remedies (such as testing of indoor spaces and insulation removal, where warranted) are not included in the alternatives.

EPA should expand the development of alternatives to allow for a more thorough review of potential remedies for East Helena soils. Funding mechanisms should be included in and described for all of the alternatives.

- **Lewis & Clark City-County Board of Health – "The Proposed Plan does not appear to conform with EPA guidance or statutory requirements"**

The BOH has concerns that the Proposed Plan does not appear to conform with EPA guidance or statutory requirements. In particular, the lack of transparency in development

and screening of alternatives has prevented the public from understanding the range of possible alternatives considered, or the benefits and drawbacks associated with these options. Typically, a proposed plan is tiered from a remedial investigation/feasibility study (RI/FS), which provides the detailed supporting documentation for possible alternatives: costs, effectiveness, technical feasibility, and so forth. However the only RI/FS referenced in the Proposed Plan dates to 1991 (Hydrometrics, 1991). Considering the 16 years of experience EPA has gained since that RI/FS, studying and attempting to remediate metals-contaminated sites across the U.S., there surely have been technological and policy advances that should be incorporated into the alternatives. It should be noted that most of the EPA guidance concerning risk assessment, remedial actions, site studies, and decision-making has been published or revised since 1991, strongly indicating that the sole RI/FS for soils cleanup should have been revised, or at least supplemented, before publication of a Proposed Plan.

EPA has indicated that the RI/FS has been updated, and notes on page 17 of the Proposed Plan: "Many of the alternatives developed at that time, however, are no longer considered viable; due principally to the substantial amount of cleanup that has since occurred. Therefore, EPA developed new alternatives that incorporate many of the features of the original alternatives, but are relevant for current conditions." If this is the case, EPA should provide the new analysis disclosing how and why some alternatives are no longer viable. The supporting documentation for new alternatives should be made available to the public for review, and the Proposed Plan should specifically reference these documents.

One example of the problems raised in using a 15+ year old RI/FS is conformance with guidance and statute. For example, as noted in the Proposed Plan (page 26) the alternatives must be evaluated against nine criteria. One of the threshold criteria that must be met is compliance with state and federal regulations (i.e., Applicable or Relevant and Appropriate Requirements [ARARs]). The Proposed Plan indicates the EPA has evaluated the alternatives for compliance with ARARs, but there was no documentation referenced or available for public review that would substantiate this conclusion. The only document discussing ARARs that we found applicable to the East Helena residential soils is the 1991 RI/FS (Hydrometrics, 1991). It is reasonable to expect that some state and federal regulations will have changed since that time, and an updated analysis is critical. If this has been done (for example, with the "new" alternatives that EPA references on page 17 of the Proposed Plan) then EPA should make the analysis readily available to the public.

Similarly and in general the EPA should supply a specific list of reference documentation pertinent to the Proposed Plan. Otherwise, it is very difficult for the public and public agencies to identify and locate documentation relevant to the subject.

According to EPA guidance, the Proposed Plan should provide "either a summary of the support agency's agreement with the plan or its dissenting comments (EPA 1999c). This requirement is clearly supported by statute, as "EPA must respond to State comments ...on the Preferred Alternative when making the RI/FS and Proposed Plan available for public comment" (NCP §300.515(d)(4)). A responsiveness summary addressing comments from MDEQ was not included in the Proposed Plan. By not making interested parties fully aware of dissenting comments and publishing them in the proposed plan, EPA has failed to meet its statutory public disclosure obligations or follow its own guidance for the CERCLA decision-making process.

- Sally K. Nyland – "I favor Alternative 3R"

I am strongly opposed to the "preferred cleanup alternative (2R)" recommended by the EPA and I favor Alternative 3R for the following reasons:

The State MDEQ has raised sufficient concerns and questions over the 1000 ppm limit as opposed to the 500 ppm in that lead blood level tests in children are based on a biased sampling of participants rather than a random sampling. The use of biased sampling is not scientific and does not lead to reliable test results.

The EPA by their own analysis has presented a different standard for "Clean up Goals for Undeveloped Lands" and is setting the requirements for remediation of undeveloped residential-use land at a maximum level of 500 ppm not 1000 ppm. These two standards are in contradiction with one another.

The difference between the two standards (residential versus undeveloped/future residential) appears to be related to availability of funding for cleanup. In other words, there is just enough money available in the ASARCO reclamation fund to implement 2R and nowhere near enough to support 3R. In the case of undeveloped lands, however, since funding will likely be paid out of the developer's pockets, the level for remediation is set at 500 ppm. This reasoning ignores the actual health issues.

The plan that the EPA implements should require a uniform standard regardless of whether it involves developed or undeveloped land. Implementation of the 500 ppm level (i.e. 3R) is the safest plan and would stand the test of time. ASARCO should be required by the EPA to meet this standard (just like private developers will be required). Because of ASARCO'S current shaky financial condition they may not be around to resolve recurring issues in the future. They need to be held accountable now while there is still opportunity!

- **Moriah Bucy – Consider costs based on the lower cleanup level leaving all other aspects the same**

The two alternatives that require action be taken are completely different and can't be accurately compared. The action alternative that was not selected is based on a yard average, which in itself is completely inappropriate, as lead handbook referred to in the previous comment specifies that yard averages should not be used. Additionally, the costs for this alternative are going to be much higher, as the soil removal will inevitably be much larger given that the entire yard would have to be removed. It would be more useful, and more accurate, to simply change the cleanup level and leave all other aspects of the remedy the same. I expect that this would result in a much lower dollar figure for overall cleanup costs. I would like to see EPA consider what the costs would be for cleanup based on the lower cleanup level from the model (520 ppm) leaving all other aspects of the chosen remedy the same.

- **Lewis & Clark City-County Board of Health – Question regarding yard average versus individual quadrant**

Page 19, 2nd column, Paragraph 1 (of the Proposed Plan) - Why are yard averages or property averages being used versus the protocol in place which uses individual quadrant analysis? Does EPA propose changing the protocol to yard averages?

- **Montana Department of Environmental Quality – Contingencies**

The Record of Decision should include a discussion of contingencies if the remedy fails to be protective. Also, it should describe the contingencies if the city or county can't / doesn't want to implement or, if it implements, but at some point can't / doesn't want to continue the institutional controls.

- **Lewis & Clark City-County Board of Health – Regarding community acceptance**

Page 29, Community Acceptance, Paragraph 2. This paragraph is incorrect. While the BOH does support protection of human health, we do not link human health protection to such criterion as "at the most reasonable cost." The BOH requests this paragraph be omitted. [Placeholder to check BOH's original letter regarding costs]

- **Montana Department of Environmental Quality – Regarding formal comments from the support agency**

The NCP, at 40 CFR 300.430(f)(2)(iii), requires at a minimum that the proposed plan provide a summary of any formal comments received from the support agency. The proposed plan did not include that but stated, "After consideration of public and local government concerns and comments, MDEQ will present formal comments to EPA." DEQ would have appreciated its own input into the Proposed Plan.

- **Lewis & Clark City-County Board of Health – Explanation for use of the term "all known measures"**

Page 26 and 27 (of the Proposed Plan) - The Proposed Plan indicates that Alternatives 2R and 3R are "by all known measures" equally protective. Please explain further. What are "all known measures"?

- **Montana Department of Environmental Quality – Disagrees with statements regarding protectiveness and risk reduction**

Eliminate the conclusion that the preferred alternative is protective of human health based on blood lead sampling. Also, alter the conclusion that remedy alternatives are equally capable of reducing risks.

- **Montana Department of Environmental Quality – Different goals and objectives for removal actions vs. remedial actions**

The preferred alternative in the proposed plan involves continuing with cleanup criteria established through the removal actions. The Record of Decision should include a discussion to notify the reader as to the different goals and objectives of a removal action compared to a remedial action. As set forth in the NCP, 55 Fed. Reg. 8695, "Although all removals must be protective of human health and the environment within their defined objectives, removals are distinct from remedial actions in that they may mitigate or stabilize the threat rather than comprehensively addressing all threats at a site."

EPA RESPONSES TO COMMENTS PERTAINING TO SELECTION OF REMEDIAL ALTERNATIVES

Responses in this category are also closely related to those pertaining to cleanup levels and institutional controls. Readers are urged to consult comments and responses within Sections IV, V, and VI, in addition to the responses provided below.

EPA's primary concern is protection of the residents of East Helena, particularly children. This concern expressed itself in the form of an interim action involving removal of lead-impacted soils from yards surrounding East Helena residences and placing the soils in the East Fields repository. This action was undertaken after careful consideration of the National Contingency Plan (NCP) threshold criteria requiring protection of human health and the environment and compliance with ARARs.

The interim action was supported by initiating the East Helena Lead Education and Abatement Program. Strong and active support by local government, their associated agencies, and the citizens of East Helena lead to a successful implementation of this program. Today, children's blood lead concentrations are below or near the national average indicating that the interim action and the Lead Education and Abatement Program have achieved their goals.

EPA agrees with all commenters who support Alternative 2R, for East Helena residential soils, and Alternative 4U, for undeveloped property. EPA agrees that the Lead Education and Abatement Program should be continued and the proposed institutional controls should be adopted. This plan is feasible and will protect the citizens of East Helena.

Following are the key factors and rationale upon which the selected remedial decision is based.

- A wealth of site-specific information, including 20 years of blood lead data for East Helena's children, support the conclusions that the cleanup to date, on which Alternative 2R is based, and other programs and efforts to reduce lead in the environment, have been successful.*
- The importance of the fine particulate pathway in contributing to blood lead levels, the presence of residual lead levels in sources other than soils, pre- and post-cleanup exposure unit average soil lead levels, and the lack of correlation between soil lead concentrations and co-located blood lead concentrations (at soil concentrations < 1,000 ppm) have all contributed to EPA's understanding of where the emphasis of a cleanup action should be directed.*
- The selected remedy includes cleanup levels that encompass a range of scientifically plausible cleanup levels based on a risk assessment, which included both a screening level point estimate and a quantitative uncertainty analysis that was developed using the IEUBK model.*
- The selected remedy is comprised of strategies for both existing residential areas and undeveloped lands. As discussed in detail in Section IV, the selected remedy for residential areas, Alternative 2R and its two-part cleanup level of 1,000/500 ppm are uniquely suited to the variability in residential soil lead concentrations. The selected remedy for undeveloped lands is suited to the conditions of low variability in lead concentrations and large open spaces amenable to treatment by tilling, and provides a cost-effective solution to combined sampling/remediation requirements. In the end, as newly-developed residential areas blend into existing residential areas, both will exhibit neighborhood average lead values less than 500 ppm.*

- *Past Removal Actions have addressed areas with soil containing concentrations of COCs above cleanup levels through excavation, backfill, and re-landscaping in residential areas, and treatment or capping/covering for undeveloped lands;*
- *The selected remedy provides future protectiveness through the cleanup of residential yards and undeveloped lands proposed for development, and the application of institutional controls. In addition, the East Helena Lead Education and Abatement Program will continue to operate;*
- *The selected remedy will be protective of human health and the environment, comply with ARARs, and be cost-effective.*

The selected remedy provides the best balance of tradeoffs among alternatives for residential and undeveloped lands, and attains an equal or higher level of achievement of the threshold and balancing criteria than other site-wide alternatives that were evaluated. The successful performance of the selected remedy is demonstrated by years of response action removal of residential soils, reclamation performance monitoring at response action sites in the OU, and the success of the Lead Education and Abatement Program.

The selected remedy includes a variety of components that together represent an effective and practical remedial solution for the type of waste and the associated level of risk at OU2. The components of the selected remedy for soils accomplish overall protection of human health and the environment and compliance with ARARs equally as well or better than other alternatives evaluated. Threshold criteria are achieved through residential soil removal; removal, capping, or treatment of undeveloped lands; and the application of institutional controls and monitoring. The selected remedy achieves substantial risk reduction and is feasible, implementable, and cost effective. The selected remedy includes treatment of lead-contaminated soil through the application of lime amendments and tilling when appropriate. The selected remedy effectively eliminates, mitigates, or manages residual risk and provides for long-term protection through residential contamination abatement, management and remediation of undeveloped lands, appropriate institutional controls, and continuous evaluation and performance monitoring of the remedy.

The selected remedy is compatible with land reuse and redevelopment within East Helena and Lewis and Clark County. EPA and the State will continue to work cooperatively with the local county government and Asarco to ensure redevelopment is protective of human health and the environment.

- *Cleanup alternatives for residential areas were originally developed in the 1990/1991 remedial investigation and feasibility study reports, and a 1991 engineering evaluation and cost analysis report. The alternatives evaluated in detail in the original site feasibility studies included no action, institutional controls (remedy protection measures), capping (covers), excavation, treatment, and disposal options. Some of the alternatives developed at that time, however, are no longer considered viable; due principally to the substantial amount of cleanup that has since occurred. In addition, the results of feasibility and treatability studies conducted during the removal actions have eliminated some alternatives. For example, the original feasibility study considered disposal of excavated residential soils in a RCRA facility, as well as disposal in East Fields. Treatment of the East Fields, and placement of excavated residential soils at East Fields have since been shown to be effective. Therefore, alternatives that incorporate many of the features of the original alternatives, but are*

relevant for current conditions, have been evaluated. Capping and in-place treatment were not alternatives presented in the Proposed Plan for residential cleanup because it has been EPA's experience that these options were not feasible for remediation of residential yards. Two removal alternatives were considered and presented rather than alternatives that are not applicable for residential yards. There are no "new" alternatives – all of the alternatives were included in the original feasibility studies. It is also noted that the final RI/FS guidance was published in 1988 and hasn't been updated since; therefore the 1991 RI/FS was prepared in accordance with current guidance.

- *The Proposed Plan is supported by information in the Administrative Record. Correspondence and reports subsequent to the 1991 RI/FS are available in the Administrative Record. Although some regulations may have been modified since 1991, and new regulations may have come into effect, the remedy is a risk-based cleanup, not an ARAR-based cleanup. Therefore, any slight changes to the ARARs since 1991 are not anticipated to affect the cleanup and the ARARs currently identified in the Administrative Record were considered sufficient to support the selection of the remedy. The Superfund Lead-Contaminated Residential Sites Handbook (EPA 2003) also points out that the Toxic Substances Control Act (TSCA) § 403 Soil Hazard Rule, which establishes a soil-lead hazard of 400 ppm for bare soil in play areas and 1,200 ppm for bare soil in non-play areas of the yard, should not be treated as an ARAR to modify approaches to addressing NPL sites. The Record of Decision will identify the ARARs for the site*
- *EPA has in the past sought funding from viable Potentially Responsible Parties for implementation and administration of ICs. However, the status of ASARCO's bankruptcy remains unknown, therefore EPA must consider the possibility East Helena will become a Fund-lead site. If that becomes the case, EPA can only seek funding from national sources, year-to-year with no absolute assurance that funding will be provided. Further, if it were to become a Fund-lead site, the State of Montana has some obligation to either match or fund long-term IC administration during operation and maintenance. Funding mechanisms are typically not described in a Proposed Plan.*
- *A value of 500 ppm has been selected as the action level for undeveloped properties to account for the differences between the methods that were used to sample undeveloped property soils and residential property soils, and to overcome uncertainty that arises from fewer samples per unit area.*
- *Funding by ASARCO was not considered during selection of the cleanup levels. See EPA Response in Category IV, Lead Cleanup Action Levels, for a detailed explanation regarding the standards for residential properties and undeveloped land.*
- *EPA provided the alternatives for consideration in the Proposed Plan coordinated with the cleanups and lessons learned over the past 15 years. The alternative selected is patterned after the residential soil removal actions that have been in place and utilized since 1991, which have been updated as appropriate (see sampling and analysis), and which EPA believes have proven safe, effective, and protective of human health. Additionally, the national EPA regulatory goals for lead of 400 ppm (by weight) in bare soil in play areas, and 1200 ppm for bare soil non-play areas, was established under TSCA in 2001 (see EPA 40 CFR Part 745 Lead; Identification of Dangerous Levels of Lead; Final Rule, January 5, 2001). Generally, a comparison of the established East Helena cleanup levels with EPA final standards, released 10 years later, illustrate that these site specific processes and cleanups*

are credible and should continue to be supported.

- *The description in the Proposed Plan of Alternative 3R - Selected Soil Removal (500 ppm lead), continuing community education, and institutional controls was an alternative examined in the feasibility study, but is not the preferred remedial alternative. If Alternative 3R was to have been selected as the preferred alternative, then it is EPA's position, consistent with the Proposed Plan, that the yard average lead values would dictate which yards qualify for cleanup.*
- *It is noteworthy that under current cleanup protocols—protocols recommended by EPA—numerous yards with an overall average lead concentration below the “guidance derived cleanup levels” are being cleaned up by virtue of having at least one section greater than 1000 ppm. The sampling methods presented in the Superfund Lead-Contaminated Residential Sites Handbook: August 2003, refers to various sample collection methods using soil composites as a collection method, which inherently average the soil materials across the particular residential site. Overall, the yard is the exposure unit, and the net effect of Alternative 2R is cleanup with a yard average of between 400 ppm and about 700 ppm lead for an entire yard. Alternative 3R approaches yard cleanups based on different cleanup levels and application protocols. A qualifying yard would have to have a yard-wide average above 500 ppm lead to require cleanup.*
- *EPA is required to summarize in a proposed plan other cleanup alternatives that were examined during the feasibility study. Alternative 3R was examined, but rejected because a cleanup level of 500-ppm lead, overall, is deemed unnecessary (Alternative 2R is protective) and the cost of Alternative 3R would be many times greater than the cost of Alternative 2R. Alternative 2R is still the EPA's preferred remedial alternative, as EPA considers its cleanup action levels (1,000/500 ppm lead) to be protective. Future cleanup activities are not warranted.*
- *While some RODs may contain contingent remedies, those are restricted for unique cases where there is a reasonable doubt as to the implementability of the primary remedy. In the case of East Helena, the remedies identified in the ROD are readily implementable, and therefore, contingent remedies are not identified. In addition, the site will be subject to Five-Year Reviews, and if an element of the remedy is not protective (this is not expected), then that part of the remedy can be reconsidered and changed, if necessary.*
- *EPA is required to include cost considerations as part of the regulatory remedial selection process and evaluation of preferred cleanup alternatives. Extensive investigation, evaluation, and documentation provided in the administrative record support the recommended alternatives, in addition to the consideration given to costs.*
- *The State's acceptance of, or perspective on, the Selected Remedy is one of the nine evaluation criteria discussed in the ROD. In addition, responses to formal comments, including the State's, are included in the ROD. The ROD is also required to identify significant changes, if any, to the Remedy between the time of publication of the Proposed Plan and the ROD, as a result of comments or for other reasons.*
- *The reference to “by all known measures” simply means an evaluation of the level of protectiveness for the two alternatives. The soil cleanup lead levels for each remedial alternative are both at levels for which no measurable effect on blood lead levels is observed*

for a residential setting. The blood lead data do not support differing levels of protectiveness for the cleanup levels associated with these alternatives. They are therefore both considered to be equal in terms of protectiveness of human health and the environment and reducing risks. The key difference in reducing the cleanup levels between Alternative 2R and 3R is a significant cost increase.

- With respect to removal and remedial actions, the quotation from NCP, 55 Fed. Reg. 8695 states, "Although all removals must be protective of human health and the environment within their defined objectives, removals are distinct from remedial actions in that they may mitigate or stabilize the threat rather than comprehensively addressing all threats at a site" indicates that the removal action may mitigate or stabilize the threat. It doesn't mean that any given Removal Action at a specific site has not comprehensively addressed all threats at a site. In the case of East Helena, it is EPA's perspective and conclusion that the previously conducted Removal Actions have comprehensively addressed the risk posed by the sites on which Removal Actions were conducted. Similarly, the EPA believes that the Preferred Alternative in the Proposed Plan (selected remedy in this ROD) also comprehensively addresses the risk posed by the site. The ROD discusses and clarifies that this is the case.

IX. INTERIOR DUST

[Note to Scott: In order to be consistent with the format of the previous comments, from this point forward the comments still need to be revised to identify the commenter first, and the commenter's major points need to be reconsidered/revised to quote the comment if possible.]

COMMENTS

- **Cleanup Alternative - Lewis & Clark City-County Board of Health**

The Preferred Cleanup Alternative should address the following:

- Attic Dust. To prevent sub-chronic, acute exposures to high concentrations of metals that may be present in the attic dust of homes in East Helena, the Preferred Cleanup Alternative should include measures to prevent such exposures. Acute exposures to attic dust have been reported in other smelter areas (Montana Standard, 2004). In addition, the Record of Decision (ROD) for the Butte Priority Soils Operable Unit of the Silver Bow Butte Area Superfund Site includes measures to mitigate attic and other household dust traps that may have accumulated substantial metal and metalloid concentrations during operational years of the smelter.
- Other potential pathways for metal exposure - for example contaminated soil in earthen walled basements or crawl spaces, and dust in heating and venting ducts.

- **Cleanup Alternative - Montana Department of Environmental Quality**

Include interior dust removal in the remedy.

- **Environmental Assessment - Montana Department of Environmental Quality**

DEQ supports the Lead Program's environmental assessment approach to assess possible

sources of lead exposure routes within a home and then provide education on how to reduce exposure. However, the selected remedy should proactively reduce unacceptable exposure, including unacceptable exposure to interior dust, and require removal of dust if there is a complete or potentially complete exposure pathway.

EPA RESPONSE TO COMMENTS PERTAINING TO INTERIOR DUST

Several commenters expressed concern for health effects that may be associated with exposure to attic dust. The Preferred Cleanup Alternative, however, includes institutional controls (ICs) as a measure to prevent or minimize exposures to all known sources of interior, household dust. The Selected Remedy will, "Establish institutional controls that will enable the Lewis and Clark City-County Board of Health and City of East Helena to adopt and enforce regulations needed to . . . [among other needs] (b) prevent exposures to interior household dust during remodeling or demolition of attics, unfinished basements, heating ducts or exterior walls and windows."

Early studies of interior dust in East Helena's homes (1983, 1989), together with air quality monitoring studies conducted throughout the 1980s and early 1990s, indicated that significantly elevated lead concentrations of both household dust and street dust were correlated. These early studies and others, particularly the 1991 comprehensive child lead study conducted by the Lewis and Clark County Health Department, further presented evidence that these sources of dust were correlated with the higher than normal blood lead levels of East Helena's children.

However, during the mid- to late-1990s and particularly after the smelter discontinued operations in 2001, lead emissions were reduced (eliminated after closure). Paved streets and sidewalks were swept and flushed over and over again, the highest concentrations of lead in yards, parks and unaved alleys and aprons were cleaned up, and education efforts raised awareness of the importance of wet-mopping and wet-dusting in homes. As a result of these repeated efforts, the sources and pathways of lead in the form of fine particulates were largely eliminated.

The Lead Education and Abatement Program environmental assessments indicate that interior, household dust is no longer a significant exposure pathway. The assessments included inspection for lead-based paint with a field-portable x-ray fluorescence (XRF) spectrometer and general screening evaluations for dust, including the collection of wipe samples according to the Health and Urban Department (HUD) protocol, but biased with respect to location. Results from the dust samples were compared against the HUD criteria of 40 ug lead/ft² for samples collected from floors, 250 ug lead/ft² from window sills, and 400 ug lead/ft² from window troughs. The assessments conducted since [DATE - CK WITH LEWIS AND CLARK COUNTY] and follow-up dust analyses, showed that elevated lead concentrations in household dust (when compared to established HUD criteria for lead inside homes), were associated with lead-based paint in all but seven of 150 tests. Moreover, in only a single instance was household dust suspected to be associated with a slightly elevated blood lead level in a young East Helena child. The low blood lead levels of East Helena's children over the past 10 years or more also support the conclusion that interior dust has minimal exposure impacts.

Active remediation of household dust does not appear to be warranted at East Helena because of an incomplete exposure pathway, except in some instances during remodeling or demolition. This is a situation similar to the Butte Priority Soils Operable Unit (BPSOU), for which the Record of Decision states, "In most homes, there is not a complete attic dust exposure pathway because attics are not living spaces and are infrequently accessed by Butte and Walkerville residents."

In addition, the Superfund Lead-Contaminated Residential Sites Handbook (EPA 2003) states, "Areas such as attics, crawl spaces, and other non-living spaces need not be addressed unless they are shown to be a continued source of contamination to the living areas" Because of the multi-source aspects of interior dust contamination, potential for recontamination, and the need for a continuing effort to manage interior dust exposure, OSWER recommends the use of an aggressive health education program to address interior dust exposure."

Nevertheless, the ROD provides for the selected remedy to include active efforts to clean up interior dust sources or pathways. If, in administering ICs, county health professionals determine that interior dust, such as attic dust or any other source of interior dust, presents unacceptable exposure in their judgment, then action is both warranted and required. EPA has considered this possibility, albeit it is unlikely to be administered except under extraordinary circumstances, and will seek funding as in the case of administration of all other ICs.

X. LEAD EDUCATION AND ABATEMENT PROGRAM

COMMENTS

- **Continue Program - Montana Department of Public Health and Human Services**

Continue the existing East Helena Lead Education and Abatement Program

- **Lack of Information - Jeri Dwan**

This mitigation shows commentor is aware Now

It seems to me that the Proposed Plan places a lot of emphasis on the East Helena Lead Abatement Program to continue to provide information to the public about the risks of lead and ways to prevent exposure to lead, particularly since the cleanup level is higher than that recommended by the state agency, DEQ. I also understand that this program is the one that conducts the blood screenings to make sure our children have not been exposed to unsafe levels of lead. The problem with this scenario is that this program is not all that well known or advertised. I feel that I can say this with certainty because I have lived in this community for nearly five years and have only seen one postcard having anything to do with the Lead Abatement Program. The troubling part is that I have a four year old son who plays outside in our yard on an almost daily basis and another baby on the way. From what I have been told, my particular neighborhood may be a lesser concern than others, as it is farther away from the source. However, as I mentioned before, I have not received any real information about risks to my children, nor have I been made aware that such information was available. I consider myself to be a well educated and concerned parent and worry that if I was not aware of the risks available information sources, there must be a lot of other parents in the community who have no idea about this issue either.

EPA RESPONSES TO COMMENTS PERTAINING TO THE LEAD EDUCATION AND ABATEMENT PROGRAM

Reverse

EPA considers the continuation of the Lead Education and Abatement Program of great importance as well. East Helena residents have expressed how important the program is to the ir feeling of well-being. Local health professionals are best suited and most qualified to continue to educate the community and to work with the community to develop and administer sensible,

Can the Pb program continue to study outreach methods?

effective institutional controls that are neither too invasive nor onerous. This ^{is a} ~~has been a~~ clearly expressed desire of the majority of East Helena residents.

Continuing education is highly desirable to parents and educators in this community. The Lead Education and Abatement Program should continue for that reason, but the program also should continue for the reason that, regardless of the cleanup action level, institutional controls will be necessary in the community and the program is best suited and qualified to administer institutional controls both now and in the future.

Program serves as a source of real data on blood Pb & is a monitor of risk

Recently, the State Medical Officer for the State of Montana Department of Public Health and Human Services supported EPA's cleanup recommendations in a letter to EPA on April 16, 2007. The State Medical Officer supports continuation of the existing East Helena Lead Education and Abatement Program and establishment of institutional controls to prevent disturbances of contaminated soil and prevent human exposure on renovation / demolition of existing houses in East Helena.

The program staff strives to reach all families in the community; however, it appears that some families may have not have been sufficiently informed. EPA has passed this information on to the County. The office is located at 2 South Morton in East Helena and the phone number is (406) 227-8451. Residents can visit the office, or call for an in-home consultation that will be provided at no cost to the resident.

Community Involvement

Currently, ASARCO is funding a county-administered health education and abatement program using health professionals stationed within the community and its schools. The community is advised by health professionals, school administrators, and teachers. The vast majority of East Helena's children are tested at least once during early childhood. Many children are tested repeatedly, although not because they have elevated blood lead levels. On the contrary, over the past 8 to 10 years, 95% or more of East Helena's children have exhibited blood lead levels equal to or less than 4 micrograms per deciliter. East Helena children have blood lead levels that are less than the national average.

The East Helena Lead Education and Abatement Program manages and implements a successful and comprehensive education program for residents within the East Helena areas affected by lead. The program is limited to notification of residents located within local zip code 59635. This zip code primarily covers all the areas of affected residents of the past operations of the ASARCO smelter. The lead education and abatement program provides substantial documentation to residents in many forms, including:

- Publishing and distributing a quarterly newsletter that talks about the cleanup activities going on in East Helena project areas
- Distributing the newsletter to about 3,400 people each quarter
- Providing "New Baby" packets, which are sent out six times per year to mothers and/or parents to raise awareness of lead issues. Overall, 300 to 400 packets have been distributed in the last five years
- Personnel trained in lead education routinely visit day care centers and schools
- At schools, lead education and abatement materials are given out and sent home with students.

Additionally, numerous documents can be referenced online and by visiting the local offices of

the EPA, MDEQ, and Lewis & Clark City-County Board of Health. Contact details are provided in the Proposed Plan and additional publicly available resources.

EPA Records Center, 10 West 15th Street, Suite 3200, Helena, Montana.
Montana Office of EPA at (406) 457-5000.
www.epa.gov/region8/superfund/mt/east_helena/index.html

Program Effectiveness

In spring 1999, EPA, ATSDR, the county, MDEQ, and ASARCO reviewed the program's effectiveness using door to door surveys and other evaluation methods. A final report is available from the county health department. The program received high grades for its performance.

Since the program's inception in 1995, 1,060 individual blood lead tests have been conducted for children in East Helena under the age of 7 years. About 1% of the children tested during this period exhibited blood lead values greater than 10 ug/dl. Since 1999, there has been a significant decrease in the numbers of children above the detection limit of 1 ug/dl lead in blood. Since 2001, there has been no child, of 520 children tested, with a blood lead value that exceeded 10 ug/dl. Moreover, 95% of children tested since 2001 were at 4 ug/dl or below. Yet, prior to 1985, two-thirds of East Helena's children exhibited blood lead ratios greater than 10 micrograms per deciliter and one-third exhibited ratios greater than 15 micrograms per deciliter.

East Helena parents have made it clear they desire a continuation of blood lead testing. They recognize that the predictive model provides for no measure of success or attainment of goals. Most parents in this community consider their efforts and those of EPA, the county administered lead education and abatement program, and Asarco to be a success that may be unparalleled, anywhere. Continued testing eliminates the need for guessing or uncertainty.

XI. SOIL SAMPLING AND ANALYSIS

COMMENTS

- **Soil Sampling and Analysis - Lewis & Clark City-County Board of Health**

The soil sampling and analysis approach is not described in the Proposed Plan for either residential yards or undeveloped land. A Modification of the Administrative Order on Consent for the East Helena Residential Soils Removal Action 1992) indicates that 5 sampling points are used within each removal unit (i.e., residential yard quadrant). Soil is removed to the depth needed to reduce the remaining lead concentration to below 440 ppm and the arsenic concentration to below 100 ppm. The BOH requests that a detailed Standard Operating Procedure (SOP) be provided describing the soil sampling and analytical approach, including the justification for determining the depth to which soils are excavated in residential yards.

The analytical method is not described in the Modification, but we understand that field portable X-Ray Fluorescence (XRF) analyzers are used to determine arsenic concentrations. Because XRF technology is a field screening approach and is not considered as accurate as

laboratory analyses (i.e., EPA Method 600017000 Series using EPA SW-846 protocols for Quality Control requirements [QA/QC]), the BOH recommends that a Quality Assurance Project Plan (QAPP) be implemented to validate the accuracy and precision of the field screening data (at least to a limited extent).

- **Fine Soil Fraction - Lewis & Clark City-County Board of Health**

In addition, it is the opinion that the lead cleanup level should be based on the lead concentration in the fine soil fraction. EPA guidance for sampling and analysis of soil at lead sites (USEPA, 2000) indicates that the concentration of lead from the fine fraction of soil (< 250 microns) is relevant for exposure from incidental soil ingestion and should be used over bulk soil analysis. The fine soil fraction is the particle size soil fraction expected to stick to fingers and, thus, become incidentally ingested. In addition, the fine soil fraction is the most likely fraction to accumulate in indoor environments as dust. The Technical Review Workgroup for metals and asbestos (TRW) reviewed data from several Superfund sites and demonstrated that the concentration of lead in the fine soil fraction differs from the concentration in the bulk soil with an enrichment of lead and other metal contaminants observed in the fine soil fraction.

The EPA lead models consider the fine soil fraction to be the primary source of the ingested soil and dust. Fine soil fraction lead concentrations are the recommended input for both the IEUBK and the Adult Lead Model (USEPA, 2000). A site-specific lead enrichment equation can be developed to relate lead concentrations in the bulk soil and fine fraction (USEPA, 2000).

EPA RESPONSES TO COMMENTS PERTAINING TO SOIL SAMPLING AND ANALYSIS

- *Development of Standard Operating Procedures (SOPs) is outside the scope and detail of the Proposed Plan. However, the subsequent remedial design process requires detailed Work Plans and Sampling and Analysis Plans. EPA considers it prudent to revisit all aspects of the Sampling and Analysis Plan during the remedial design process, including review, updates, and modifications to existing protocols and procedures, if warranted. However, EPA has used a conservative sampling approach to date, as described below.*

EPA collected soil samples utilizing a protocol for residential yards that produced "biased" results. That is, early in the cleanup process, sampling methods were improved and modified in order to locate the highest lead concentrations of each yard. Depressions and drip lines that collect runoff; play areas that lacked a protective grass barrier; undisturbed areas around the property's periphery; parking areas for trucks and equipment; worn paths from shops or garages; areas showing signs of fallen chipped paint; junk storage areas (batteries, oil, hobbies, etc.); and kennels and pet runways were all areas that sampling teams were required to seek out and collect soil for analysis.

Analytical results for lead were adjusted to ensure that a statistically-derived upper 95th percentile confidence limit was achieved. That is, every soil sample analyzed for lead was reported first as a raw value and second as the UCL 95% value. The adjusted lead values were used to determine whether or not a yard qualifies for cleanup. Biased sampling and the UCL 95% adjustment, together, resulted in a significantly more conservative outcome than is "required" by EPA's national guidance. To illustrate, the following actual examples are presented:

1. The residential yard with site code HC05 was sampled in 1991 without biasing the collection of samples and without the UCL 95% adjustment. The analytical results for lead (in parts per million) were Q1 = 658, Q2 = 588, Q3 = 813, Q4 = 685. It did not qualify for cleanup. In 1994, this yard, and an additional 180 other residential yards, were resampled using the biased approach and the UCL 95% adjustment. The analytical results for this same property in 1994, using the biased approach and the UCL 95% adjustment, were Q1 = 1069, Q2 = 957, Q3 = 684, and Q4 = 1033 (ppm lead). This property was cleaned up and all 4 quadrants qualified for cleanup based on the 1,000/500 ppm criteria.

2. Another residential property (Site Code TK03) was sampled in 1991 without biased sampling and without the UCL 95% adjustment. The analytical results for lead (ppm) were Q1 = 336, Q2 = 497, Q3 = 263, Q4 = 338. It did not qualify for cleanup. This yard was resampled in 1994 using the biased approach, which resulted in dividing the yard into 7 sections rather than 4, and the UCL 95% adjustment. The analytical results for this property in 1994 were Sec 1 = 1370, Sec 2 = 747, Sec 3 = 429, Sec 4 = 369, Sec 5 = 872, Sec 6 = 742, and Sec 7 = 510 (ppm lead). This property was cleaned up and 5 of the 7 sections qualified for cleanup.

These are not isolated examples. Following modification of the sampling and analysis plan in 1994, approximately 60% of the resampled yards were found to qualify for cleanup.

- The Spectrase 5000 XRF spectrometer has been utilized to accurately and effectively implement the East Helena residential soil cleanup in a timely and cost effective manner. EPA will continue to utilize this tool, or a similar tool, together with the requisite number of cross-checks and data validation procedures (see XRF Technologies for Measuring Trace Elements in Soil and Sediment, Innovative Technology Verification Report, EPA/540/R-06/002, February 2006).

XII. COMMERCIAL AND RECREATIONAL RISK-BASED CLEANUP LEVELS

COMMENTS

- **Railroad Right-of-Way Cleanup - Lewis & Clark City-County Board of Health**

Page 1, 2nd column, last bullet (of the Proposed Plan) - Please provide information regarding how Burlington Northern and Montana Rail Link will be in the railroad right-of-way cleanup.

- **Rodeo Grounds - Lewis & Clark City-County Board of Health**

Page 21, 2nd column, Paragraph 1 (of the Proposed Plan) - this states "...it is simply not practical to eliminate all sources of and pathways for lead exposure from this large site (the rodeo grounds)." EPA provides no substantiation for this conclusion.

The soils of the rodeo grounds contain very high concentrations of lead and arsenic. To prevent sub-chronic, acute exposures largely due to fugitive dust emissions, the Preferred Cleanup Alternative should include measures to prevent such exposures.

- **Rodeo Grounds Cleanup - Montana Department of Environmental Quality**

The Record of Decision should require cleanup of the portions of the rodeo grounds with

soil levels above the recreational cleanup level of 2,800 ppm lead and 1,000 ppm arsenic.

- **Upstream Contaminant Sources - Lewis & Clark City-County Board of Health**

Prickly Pear Creek Upstream Contaminant Sources - The Proposed Plan should include measures to assure that upstream contaminant sources, such as slag piles, ore storage areas, and the process ponds, are adequately contained or removed to prevent re-contamination of the Creek sediments during major storm and flooding events.

- **Documentation - Montana Department of Environmental Quality**

Please provide the assumptions, risk calculations, and risk management basis used to determine the newly proposed soil cleanup levels for commercial and recreational land use. DEQ requests copies of this documentation for review and comment as soon as possible. Also, the Record of Decision should make clear that the soil cleanup levels for commercial and recreational land use apply to the entire operable unit and not just undeveloped lands.

- **Reference for Risk-Based Concentrations for Workers and Recreationists - Lewis & Clark City-County Board of Health**

Page 16, 1st column, last paragraph (of the Proposed Plan) - Please provide the reference for the recent calculations establishing risk-based concentrations of lead and arsenic in soils for undeveloped lands for workers and recreationists.

EPA RESPONSES TO COMMENTS PERTAINING TO COMMERCIAL AND RECREATIONAL RISK-BASED CLEANUP LEVELS

- *EPA has identified both Burlington Northern and Montana Rail Link as Potentially Responsible Parties (PRPs) and both companies are aware that EPA considers them as PRPs. These PRPs, as well as the principal PRP, Asarco, either collectively or individually will be given opportunities to enter into a negotiated consent decree, after the ROD for East Helena is issued. Cleanup of the railroad right-of-way is part of the selected remedy.*
- *The rodeo grounds are not planned for cleanup under the CERCLA action, based on the limited, occasional usage in the summer, typically 10 days per year or less. A cleanup of this area would unnecessarily devote funds to a situation that presents practically no risk. The recreational standard for lead is 3,245 ppm. The criteria cited by MDEQ are based on the assumptions of year-round usage. Each year, the rodeo arena itself is completely covered with a new, thick layer of powdery, clean fill for the protection of rodeo participants. This area is illustrative of the need for continuing education and institutional controls.*
- *Contaminant transport from the smelter, during historic floods, occurred primarily because fine, powdery concentrates were stored in piles outdoors until 1988-1989. Floods, such as in 1964 and 1980-1981, as well as numerous other floods that occurred during the first half of the 20th Century, are known to have carried fine concentrates in suspension and deposited them across a broad flood plain downstream. Evidence of these events exists to this day in the formerly irrigated fields north of town and all the way downstream to Lake Helena. However, in 1988-1989, Asarco constructed a large ores and concentrates storage and handling building, which eliminated outdoor storage of raw materials. Shortly after, Asarco*

also constructed a smelter runoff collection and flood routing system. These were cooperative efforts involving Asarco, MDEQ (then MDHES) and EPA, and they eliminated any further potential for flooding or transport of contamination. Existing residential neighborhoods that were impacted by flooding and contaminant transport were among the first yards, parks, playgrounds, street aprons and alleys to be cleaned up ("yellow zone," 1992-1996). Furthermore, the selected remedy requires completion of a cleanup involving the former irrigation ditches and channels north of town. Approximately 60% of the impacted ditches and channels were cleaned up before the smelter discontinued operations in 2001. All remaining impacted ditches and channels have been characterized and will be cleaned up in 2009 or 2010.

- The PRGs referred to in the Proposed Plan for exposure of workers and recreational visitors to lead and arsenic were based on initial calculations that have subsequently been revised to be fully consistent with revised EPA guidance and with PRG calculations for residential exposures. These revised PRGs are described in an EPA technical memorandum dated July 30, 2007. The revised PRGs are as follows: 1482 ppm lead for workers, 3245 ppm lead for recreationists, 572 ppm arsenic for workers, and 794 ppm arsenic for recreationists. The revised PRGs (also referred to as risk-based concentrations) are fully explained and incorporated in the Record of Decision.

XIII. RISK-BASED CLEANUP ACTION LEVEL FOR SOIL ARSENIC

COMMENTS

- **Cleanup Alternatives - Lewis & Clark City-County Board of Health**

The Proposed Plan does not present cleanup alternatives specific to arsenic. Rather, it indicates that because arsenic is with lead, it should be mitigated through the remedy directed at lead in soils. It is the opinion of the BOH that the Preferred Cleanup Alternative should be revised to ensure the arsenic cleanup level is attained. For example, Alternative 2R should be revised as follows: Selected Soil Removal (lead cleanup level [ppm] and arsenic cleanup level [ppm], Continuing Community Education, and Institutional Controls.

- **Cleanup Alternatives - Montana Department of Environmental Quality**

The remedy should require that residential soils with arsenic greater than the action level should qualify a yard for cleanup.

- **Preliminary Remediation Goal - Lewis & Clark City-County Board of Health**

The BOH does not agree that the arsenic Preliminary Remediation Goal (PRG) of 176 parts per million (ppm) is health protective. The PRG was calculated using a target risk of 1.499×10^{-4} , which exceeds EPA's acceptable risk range of 1×10^{-6} to 1×10^{-4} (i.e., one in one million to one in ten thousand) (USEPA, 1991) and MDEQ's acceptable risk range of 1×10^{-5} to 1×10^{-6} (i.e., one in one hundred thousand to one in one million). Although EPA guidance indicates that when risks are being estimated they should be considered accurate to one significant figure the BOH does believe it appropriate to intentionally select the largest target risk that may mathematically be rounded down to 1.0×10^{-4} . In addition, EPA indicates a preference for remedies that will achieve the more protective end of the range (i.e., 1.0×10^{-6}). Therefore, the arsenic PRG should be recalculated using a target risk within both EPA's and MDEQ's

acceptable risk ranges, as well as considering appropriate background concentrations. The BOH acknowledges that background concentrations in Montana may exceed 1.0E-05 (MDEQ, 2005) and must, therefore, be considered in the development of the site-specific PRG for arsenic in East Helena.

The recalculation of the arsenic PRG should include the contribution from the dermal exposure pathway that was previously omitted (ISSI, 1999). Considering a site-specific relative bioavailability (RBA) for arsenic is not available, the RBA should be conservatively estimated in the 80 to 100% range (as was used in the 1989 [Hunter Services] and 1995 [Kleinfelder] risk assessments), rather than the estimate of 50% used to calculate the arsenic PRG (ISSI, 1999, 2001).

Cleanup levels selected for arsenic in soils at other mining and mineral processing sites also suggest the East Helena PRG is not protective. For example, 70 ppm of arsenic or greater in soils is the threshold selected by EPA for residential yard removal and replacement at the Vasquez Boulevard & 1-70 superfund site in Denver. Arsenic cleanup levels for residential soils are all 100 ppm or less for the ASARO/El Paso Smelter site, Coeur d'Alene basin, Jacobs Smelter in Utah, Smelter in Utah, Sharon Steel in Utah, and ASARCO/Globe Site in Colorado. Closer to home, Montana DEQ has established a "generic" 40 ppm action level for arsenic in soil that is based on carcinogenic and non-cancer risk analysis (MDEQ 2005).

It is also worth referring to the 1991 Remedial Investigation/Feasibility Study (RI/FS) which presumably provides the basis for the Proposed Plan. This document assessed concentrations of a number of metals and metalloids in residential soils, and used a risk-based modeling approach to develop remedial goals. The target concentration identified in the RI/FS for arsenic is 45 ppm, approximately 1/4 the PRG noted in the Proposed Plan (Hydrometrics 1991; see Table 1 0-6-I).

It is the opinion of the BOH that the arsenic contamination remaining in soils may well be a "source of concern" to the community in that cancer probability from exposure to these soils may exceed EPA's range of acceptable risk. It should be noted that EPA's Proposed Plan seems to acknowledge this possibility, in stating: "As arsenic concentrations in soil rise above that value, however, long term exposures (timeline) present risks that may be unacceptable." (page 32).

The development of the arsenic PRG should also allow for the uncertainty associated with the toxicity of arsenic, a known human carcinogen. For example, the California Environmental Protection Agency considers arsenic more toxic than EPA and has adopted a cancer slope factor for arsenic that is 9 times greater than the arsenic cancer slope factor available from EPA (USEPA, 2004a).

- **Preliminary Remediation Goal - Montana Department of Environmental Quality**

The calculated cancer risk of 1.499E-04 exceeds EPA's "acceptable" risk level of 1.0E-04, as well as DEQ's "acceptable" risk of 1.0E-05. The correct application using 1.0E-04 in the calculation gives an arsenic PRG of 117 ppm. The Record of Decision should list the arsenic PRG of 117 ppm.

- **Natural Background Levels - Lewis & Clark City-County Board of Health**

We would also note that it is erroneous to equate average arsenic levels below 80 ppm to "near natural levels." According to EPA's supporting documentation for East Helena, the background arsenic levels used for comparison range from 15 to 18 ppm, with an average of 16.5 ppm. (Hydrometrics 1991, Table 5-1-1).

EPA RESPONSES TO COMMENTS PERTAINING TO DEVELOPMENT OF ARSENIC RISK BASED CONCENTRATIONS

- *The Proposed Plan presents a summary of how risks from exposure to arsenic were evaluated, explains EPA's rationale for conducting a supplemental arsenic risk evaluation from 1999 to 2001, and outlines the development of cleanup alternatives. The supplemental arsenic risk evaluation resulted in a site-specific, risk-based remediation goal for arsenic in residential settings of 176 mg/kg (ppm). This value has been identified as a cleanup level within the Remedial Action Objectives for the East Helena site. In the unlikely event where a yard average soil arsenic concentration may be found to exceed the site-specific, cleanup level of 176 ppm, yet soil lead does not exceed the lead cleanup action level, that yard qualifies for remedial action regardless of soil lead concentrations. [Note: Check with SRC regarding exposure assessment guidance pertaining to arsenic]*

Additionally, all soils requiring sampling in the future—residential, commercial, recreational and industrial alike—will continue to undergo analysis for lead, arsenic, and cadmium.

A follow-on comparison was conducted to see if there were any individual residential yards or lots that might have arsenic greater than 176 ppm, where lead did not exceed 1,000 ppm. None was found. Moreover, as additional sampling has been conducted each and every year since 2001, this relationship has held together without exception. In addition, only six properties were identified where the average arsenic concentration exceeded 176 ppm. However, after implementation of the lead-based cleanup, all six of these properties will be cleaned up and no property will exceed an average value of 176 ppm. These results support the conclusion that a clean-up approach based on lead will adequately address any concerns that may exist regarding arsenic.

- *As mentioned previously, this ROD includes Remedial Action Objectives and cleanup levels for arsenic that are not dependent on the soil lead concentration. Alternatives other than soil removal for remediation of arsenic were not identified because arsenic will be mitigated when lead is removed. For further detail, please see the supplemental response to questions at the end of this responsiveness summary.*
- *The National Contingency Plan for the Superfund program defines EPA's acceptable risk range for known or suspected carcinogens as 10^{-6} to 10^{-4} , not 1.0×10^{-6} to 1.0×10^{-4} (NCP, 1990). The proposed cleanup level for arsenic is within the acceptable risk range as defined by the NCP. The choice of a target risk of $1.499\text{E-}04$ is intended to avoid the occurrence of what would be considered to be an internal inconsistency. If the target risk used to derive a PRG is based on a target risk of $1.00\text{E-}04$, this implies that EPA will take action at all locations that exceed the preliminary remediation goal (PRG). However, all properties whose concentration is above the PRG but below 1.499 times the PRG will have a computed risk of $1\text{E-}04$, which is judged to be acceptable. In that scenario, action would be taken on properties determined to have an acceptable level of risk, thus the inconsistency.*

The dermal pathway has not been included in the calculation because dermal absorption of metals from soil is generally considered to be minor. For example, if an individual

experiences dermal exposure to outdoor soil over about 30% of their body for 100 days per year (this is considered to be quite unlikely for a resident), the absorbed dose is less than 10% of the orally absorbed dose. Studies by Lowney (2005) have shown that while 2-6% of soluble arsenic acid is absorbed percutaneously, Colorado and New York soils containing arsenic (both wet and dry) exhibited negligible dermal absorption of arsenic. EPA agrees this is a source of uncertainty, but considers the likely magnitude of the underestimation to be small.

The relative bioavailability (RBA) value that was used to derive the PRG is based on measured values in soil at a number of other mining and smelting sites, where most values are observed to range from 10% to 30%. Based on bioavailability studies conducted by Roberts et al (2006) in cynomolgus monkeys and USEPA (2005) in immature swine, the evidence strongly supports reduced bioavailability of arsenic from soil. In Roberts et al (2006) arsenic bioavailability was measured for 14 soil samples from 12 different sites, including mining and smelting sites, pesticide facilities, cattle dip vat soil, and chemical plant soil. The RBAs ranged from 5% to 31%. In USEPA (2005) 26 test materials from mining and smelting sites were investigated with RBAs ranging from 10% to 60%. Thus, a choice of 50% is judged to be more realistic than a value of 80% to 100%, but still protective of human health.

The observation that other sites have selected PRGs that are different from East Helena is not surprising, because the factors that go into the derivation of the PRG and the risk management strategy vary from site to site. Residential cleanup levels for arsenic in soil range from 70 – 250 ppm in Region 8. The 176 ppm proposed for East Helena is site-specific, is risk-based and is within that range.

While EPA agrees that there is uncertainty in the calculation of the PRG for arsenic, EPA does not believe that the approach employed by California is necessary to protect public health. Rather, EPA believes that there is sufficient conservatism inherent in the exposure factors and toxicity factors that the PRG derived for this site will be protective despite the uncertainties. [Placeholder for further response, dependent on discussion with SRC]

- The comment by the Board of Health, regarding arsenic background concentrations, appears to have confused two different concepts that are discussed consecutively in the Proposed Plan text. The first states, "It is noteworthy that all of the remaining 100 to 110 yards and nine vacant lots that are known to qualify for a cleanup (based upon their lead levels) have an average arsenic concentration well below 176 ppm. The majority of them are below 80 ppm." The second states, "Due to the cleanup already conducted, the community-wide average arsenic-in-soil concentration is now near natural levels." The first concept addresses arsenic-in-soil concentrations for residential yards that have not been remediated. The second concept refers to the fact that the average arsenic-in-soil of any given neighborhood, as well as the community-wide average, already approaches natural levels (i.e., approximately 40 mg/kg) and will be further reduced once the cleanup has been completed. The expression "near natural levels" was not being defined as an arsenic soil concentration of 80 ppm.

XIV. EXTENT OF CONTAMINATION

COMMENTS

- **Boundary Map Accuracy - Laura and Brian Vachowski**

The plan suggests EPA has no knowledge of the actual extent of contamination on undeveloped property. We therefore question the accuracy of the boundary map provided in the plan. Moreover, it is premature to be proposing a final plan for a Superfund site if, in fact, the EPA does not even know the extent of the contamination because, for instance, if that is indeed the case, the cost estimates used for alternative comparisons cannot possibly be accurate.

- **Extent of Contamination - Lewis & Clark City-County Board of Health**

Page 5 (of the Proposed Plan) - Please provide a figure depicting the extent of arsenic contamination in East Helena (similar to Figure 1 that depicts the extent of lead contamination).

- **Revise Figure 1 - Lewis & Clark City-County Board of Health**

Page 5, Figure 1 (of the Proposed Plan) - Please provide a map showing the East Helena City Boundary, lands owned by ASARCO, the railroads and other major landowners.

EPA RESPONSES TO COMMENTS PERTAINING TO EXTENT OF CONTAMINATION

- *Regarding the figure showing the extent of lead contamination, the lead isoline depicting the outermost extent of properties likely to exhibit a single value exceeding 1,000 ppm lead (red isoline) has an associated confidence of 97.5%. That means, outside of the isoline, there is less than a 2.5% chance that additional sampling will reveal a single value in a yard greater than the action level. Sampling outside of this isoline has, in fact, revealed no known single value greater than the action level. Thus, confidence is high and uncertainty is low that this isoline marks the outer limit of the residential cleanup based on the selected remedial action.*

The yellow isoline (outer isoline) gave EPA an indication, albeit with less confidence and less certainty, due to lesser sampling frequency, the location of properties that are likely to exceed 500 ppm lead. This isoline was useful for the Proposed Plan and for consideration of an alternative action level for residential yards (i.e., 500 ppm lead, for example, included properties within and around the outer, yellow isoline). Sampling of at least another 900 to 1,000 properties would have been necessary in order to identify the likely outer extent of that alternative action level. The outer isoline, though less certain, gave EPA the best information available for estimating the cost differential between Alternative 2R and Alternative 3R. The outer, yellow isoline does lend some assistance to administrators of ICs, who will in the future make decisions about the need for additional sampling whenever a change in land use is to be considered. As more and more sampling is performed around the outer isoline, statistical certainty and confidence will approach levels of certainty and confidence now afforded by the intensity of sampling that has already been conducted within and around the inner, red isoline.

As undeveloped lands come under consideration for a change in land use, sampling will be required. This approach is already in practice and has proven to be the most efficient and cost-effective way to deal with proposed changes in land use for undeveloped lands. Landowners and developers are benefited when they work with the County's subdivision

review process after a new use is proposed.

- *EPA has provided in the Record of Decision a figure showing the extent of arsenic contamination. The extent of arsenic contamination has been presented in previous site characterization studies. For example, Figure 5-1-6. Isoline map of total surface soil arsenic (ug/g) in the East Helena Area was presented in the Comprehensive Remedial Investigation/Feasibility Study, vol. 1, 1990.*
- *EPA purposely has not established a site boundary. Early soil characterization efforts revealed that the effect of the smelter's emissions were measurable over a large area in the Helena valley. Final cleanup standards and procedures are established in this final ROD, which in turn give regulators and administrators of ICs greater authority to correct and manage impacts on human health and the environment than an arbitrary boundary.*

ATTACHMENT

Lewis and Clark City-County Board of Health Draft Regulations

SECTION 1. AUTHORITY, SCOPE, AND REVISIONS

TITLE

(1) These regulations will be known and cited as: THE REGULATIONS GOVERNING SOIL DISPLACEMENT AND DISPOSAL FOR LEAD CONTAMINATED SOIL FROM EAST HELENA AND THE SURROUNDING AREA IN LEWIS AND CLARK COUNTY, MONTANA.

AUTHORITY

(1) The Lewis and Clark City-County Board of Health promulgates these regulations under the authority of Section 50-2-1 16(2)(l)(i), MCA.

FINDINGS

(1) The Lewis and Clark City-County Board of Health finds that:

(a) The United States Environmental Protection Agency (EPA) has identified and designated East Helena and the surrounding area as a Superfund site, and in 1984 placed such site on the EPA's National Priorities List for clean up and remediation under the Comprehensive Environmental Response, Compensation, and Liability Act (CERCLA).

(b) The primary lead smelter, owned by ASARCO, is the source of contamination.

(c) East Helena and the surrounding area, as shown in Figure 1, contain lead contaminated soils; and

(d) Regulation of soil displacement is necessary to prevent lead contamination of uncontaminated areas, prevent recontamination of remediated areas, and prevent potential health risks to humans, especially small children; and

(e) These regulations are necessary to protect public health and to control environmental lead pollution within the boundaries of Figure 1.

SCOPE

(1) These regulations apply to any soil displacement, with the exception of landscaping and tilling of agricultural fields and gardens, within the boundaries shown in Figure 1.

(2) ASARCO's primary lead smelter in East Helena, American Chemet, Helena Sand and Gravel, and Helena Regional Airport are excluded from these regulations except when large redevelopment projects are proposed. Prior notification to the East Helena Lead Program is required.

REVISION

(1) After notice and public hearing, the Lewis and Clark City-County Board of Health may revise these regulations to ensure proper administration and to allow for improved mitigation measures for lead-contaminated soil in the area depicted in Figure 1.

SECTION 2. GENERAL REGULATIONS

2.1 PROHIBITED ACTIVITY

(1) No person shall displace soil, with the exception of landscaping and tilling of agricultural fields and gardens, within the area shown in Figure 1 without first complying with the permit procedures and requirements as provided in Section 3, except that, in accordance with Section 9621(e) of Title 42 of the United States Code, nothing contained in this section shall require or be construed to require the obtaining of a permit by any agency, employee, or contractor of the United States, the State, or ASARCO for activities conducted entirely within the East Helena Superfund site carried out in compliance with the provisions of the Comprehensive Environmental Response, Compensation, and Liability Act, 42 U.S.C. Section 9601, et seq. and the Resource Conservation and Recovery Act, 42 U.S.C. Section 6901, et seq., and approved by EPA in consultation with the State.

2.2 VIOLATIONS

- (1) Failure to have a permit.
- (2) Failure to post the permit at the site.
- (3) Failure to comply with the permit.

2.3 FEES

No fees will be charged to obtain a permit.

SECTION 3. PERMIT PROCEDURES AND REQUIREMENTS

3.1 APPLICATION PROCESS FOR PERMIT

(1) All persons will abide by the following requirements prior to displacement of soil in the area shown in Figure 1:

- (a) Apply for permit.
- (b) Make an appointment to meet with Health Department staff to discuss a project plan. The project plan will include, but not be limited to, such information as the location and nature of the proposed activity or development; the dimensions of all surface areas to be displaced; the depth of any proposed excavation and volume of soil to be excavated or displaced. Staff will meet with applicant within five working days.
- (c) Submit the project plan for approval.

(1) [sic] At this point, the Health Department staff will examine existing soil sampling records to determine lead levels of the property. If no record of previous sampling exists, the Health Department staff may require sampling of the soil as soon as possible. The soil sampling will occur in the area to be displaced. The soil sampling will be done at no cost to the property owner.

(2) Health Department staff may approve or modify the project plan, which contains the results of soil sampling and the method for controlling contaminated-soil disposal. Approval of plan and issuing a permit will be made within five working days after all information is supplied to staff.

(3) Individual education will be provided for each applicant.

(4) Only after the Health Department staff approves the project plan, will the permit be granted.

(a) The applicant or the applicant's representative must comply with the approved project plan.

(5) The applicant must prominently display the permit tag supplied by the Health Department at the site until Health Department staff completes the final inspection.

(a) The applicant or the applicant's representative must notify Health Department staff when the project is ready for a final inspection.

(6) Permits will be valid for one year after date of issue.

3.2 CONTROL OF SURPLUS SOIL DISPOSAL

(1) Surplus soil from residential areas may be reused only on the property of origin.

(2) Surplus soils will be transported by the homeowner or by the East Helena Lead Education Program, for disposal to an EPA-approved repository.

(3) Commercial properties may use all of the existing soils on site as long as appropriate plans for barriers and capping have been reviewed and approved by Health Department staff. Excess soils must be transported to an EPA approved repository.

(4) Applicants will be responsible for placing excess soil in an area that is directly accessible to the East Helena Lead Education Program or their contractor, so that the soil can be easily transported. Soil must be stored as directed by Health Department staff.

SECTION 4. ENFORCEMENT AND SEVERABILITY

4.1 ACCESS RIGHTS

(1) The Lewis and Clark City-County Health Department is authorized and directed to make such inspections as are necessary to determine compliance with these regulations.

(2) It is the responsibility of the owner, occupant, or contractor of a property to give the Lewis and Clark City-County Health Department free access to the property at reasonable times for the purpose of making such inspections as are necessary for determining compliance with these regulations.

(3) No person may interfere with representatives of the Lewis and Clark City-County Health Department in the discharge of their duty.

4.2 PENALTIES FOR VIOLATIONS

(1) Violations of any of the provisions of these regulations are a misdemeanor and are punishable as provided for in Section 50-2-124, Montana Code Annotated.

4.3 INJUNCTIONS

(1) The County Attorney may commence an action to restrain and enjoin acts in violation of these regulations. Violation of any such injunction is subject to punishment by the issuing court.

4.4 SEVERABILITY

(1) In the event that any section, subsection, or other portion of these regulations is for any reason held invalid or unconstitutional, such section, subsection, or portion will be considered a separate provision of these regulations and such holding will not affect the validity of the remaining portions of these regulations which will remain in full force and effect.

SECTION 5. DEFINITIONS

CERCLA - The Comprehensive Environmental Response, Compensation and Liability Act of 1980, as amended by the Superfund Amendments and Reauthorization Act of 1986, 42 U.S.C. Section 9601, et seq. CERCLA is the law that governs Superfund activity.

COMMERCIAL PROPERTY OR SITES Property or sites having profit as a chief aim, excluding daycares, schools, and agricultural property.

EPA U. S. Environmental Protection Agency.

LEAD-CONTAMINATED SOIL Soil that contains lead in concentrations sufficient to pose unacceptable health risks to children.

PERMIT Means the written authorization from the Lewis and Clark City-County Health Department to disturb the soil in the area shown in Figure 1.

PPM LEAD Lead in soil expressed in parts per million.

RCRA The Resource Conservation and Recovery Act, 42 U.S.C. Section 6901, et seq.

REPOSITORY An EPA-approved location for the disposition of contaminated soils.

RESPONSIBLE PARTY The responsible party is ASARCO.

SOIL DISPLACEMENT Relocation of soil on a single piece of property. Soil displacement does not include landscaping, tilling of agricultural land or gardens when no surplus soil is removed from the area.

SOIL SAMPLING Collection and analysis of surface soil samples taken either as part of the Superfund cleanup action or taken in response to meeting conditions of this permit process. The soil sampling, if required, shall be conducted at no cost to the property owner.

SECTION 6. REPEALER AND EFFECTIVE DATE

6.1 All previous rules, regulations, resolutions and ordinances as adopted by the Lewis and Clark City-County Board of Health governing soil disturbances in Lewis and Clark County are hereby repealed.

6.2 These regulations will be in full force and effect on the day of _____.

6.3 These regulations will be reviewed and evaluated by the Lewis and Clark City- County Board of Health two years from the effective date, and every two years thereafter.

Lewis and Clark City & County Board of Health

Jennifer Winterstenen, Chair
Board Of Health

Melanie Reynolds, Health Officer
Lewis and Clark City-County Health Department

o O o

Health Consultation

EAST HELENA SUPERFUND SITE

EAST HELENA, LEWIS AND CLARK COUNTY, MONTANA

EPA FACILITY ID: MTD006230346

May 20, 2008

U.S. DEPARTMENT OF HEALTH AND HUMAN SERVICES

Public Health Service

Agency for Toxic Substances and Disease Registry

Division of Health Assessment and Consultation

Atlanta, Georgia 30333

Health Consultation: A Note of Explanation

An ATSDR health consultation is a verbal or written response from ATSDR to a specific request for information about health risks related to a specific site, a chemical release, or the presence of hazardous material. In order to prevent or mitigate exposures, a consultation may lead to specific actions, such as restricting use of or replacing water supplies; intensifying environmental sampling; restricting site access; or removing the contaminated material.

In addition, consultations may recommend additional public health actions, such as conducting health surveillance activities to evaluate exposure or trends in adverse health outcomes; conducting biological indicators of exposure studies to assess exposure; and providing health education for health care providers and community members. This concludes the health consultation process for this site, unless additional information is obtained by ATSDR, which in the Agency's opinion, indicates a need to revise or append the conclusions previously issued.

You May Contact ATSDR Toll Free at

1-800-CDC-INFO

or

Visit our Home Page at: <http://www.atsdr.cdc.gov>

HEALTH CONSULTATION

Review of Preferred Cleanup
Alternatives 2R and 3R

EAST HELENA SUPERFUND SITE

EAST HELENA, LEWIS AND CLARK COUNTY, MONTANA

EPA FACILITY ID: MTD006230346



Prepared by:

U.S. Department of Health and Human Services
Agency for Toxic Substances and Disease Registry

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1 Statement of Issues

The Montana Department of Environmental Quality (MDEQ) requested that the Agency for Toxic Substances and Disease Registry (ATSDR) determine whether two proposed cleanup alternatives for lead contamination in residential areas of the East Helena Superfund site are protective of public health. These two cleanup alternatives, which are documented in the US Environmental Protection Agency's (EPA's) proposed plan for final cleanup [EPA 2007a], are referred to as

- Alternative 2R—Selected Soil Removal [1,000/500 parts per million (ppm) lead], Continuing Community Education, and Institutional Controls; and
- Alternative 3R—Selected Soil Removal (500 ppm lead), Continuing Community Education, and Institutional Controls.

ATSDR understands that a level of flexibility is needed to best respond to different site conditions, communities, and uncertainties at lead-contaminated residential sites. In this health consultation, ATSDR evaluates whether two of the proposed cleanup alternatives developed specifically for the East Helena Superfund site are protective of public health.

2 Background

The following background text will first provide information about lead, the primary contaminant of concern. Then, ATSDR provides a summary of the history and characteristics of the East Helena Superfund site as described in EPA's January 2007 proposed plan for final cleanup [EPA 2007a].

2.1 Lead

Lead is a naturally occurring bluish-gray metal found in small amounts in the earth's crust. Lead can be found in all parts of our environment. Much of it comes from human activities including burning fossil fuels, mining, and manufacturing [ATSDR 2007c].

Lead can affect almost every organ and system in the body, although the main target for lead toxicity is the nervous system. Children are more vulnerable to lead poisoning than adults. A child who swallows large amounts of lead may develop blood anemia, severe stomach-ache, muscle weakness, and brain damage. Unborn children can be exposed to lead through their mothers. Harmful health effects include premature births, smaller babies, decreased mental ability in the infant, learning difficulties, and reduced growth in young children [ATSDR 2007c].

Previously, the Centers for Disease Control and Prevention (CDC) responded to the accumulated evidence of adverse effects associated with lead exposures by lowering the blood lead level (BLL) of concern from 60 micrograms of lead per deciliter of blood ($\mu\text{g}/\text{dL}$) to 25 $\mu\text{g}/\text{dL}$. In 1991, CDC recommended lowering the level for individual intervention to 15 $\mu\text{g}/\text{dL}$ and implementing communitywide primary lead poisoning prevention activities in areas where many children have BLLs greater than 10 $\mu\text{g}/\text{dL}$. However, this level, which was originally intended to trigger communitywide prevention activities, has been misinterpreted frequently as a definitive toxicologic threshold. Although there is evidence of adverse health effects in children with blood lead levels

below 10 µg/dL, CDC has not changed its level of concern, which remains at levels greater than 10 µg/dL [CDC 2005].

Because there is no clear threshold for some of the more sensitive health effects, no guidelines for a safe dose of lead intake have been established. EPA has no reference dose (RfD) and ATSDR has no minimal risk level (MRL) to serve as a safe oral dose below which adverse health effects are unlikely to occur. However, lead cannot be entirely eliminated from soil so there will always be some residual levels following cleanup actions at lead-contaminated sites. When deriving a site-specific cleanup level for lead, EPA considers aspects such as site-specific variability in exposure, lead geochemistry, and projected land use. EPA can also factor in other considerations such as cost, technical feasibility, compliance with state and federal regulations, and community acceptance. These factors result in large variations in proposed cleanup levels at different lead-contaminated sites.

2.2 Site Characteristics

The East Helena Superfund site consists of an abandoned smelter and adjoining areas including all of the City of East Helena, nearby residential subdivisions, numerous rural developments such as farms and homes on small acreage plots, and surrounding undeveloped lands (see Figure 1, Appendix A).

The smelter operated from 1888 until April 2001. Asarco took ownership of the smelter in 1895 and continued to operate it until its closure in 2001. Asarco still owns the smelter grounds and much of the undeveloped lands surrounding East Helena. During its operation the smelter produced lead bullion, but also recovered copper, gold, silver, and platinum for refining at other Asarco facilities. Ores and concentrates were shipped to East Helena for smelting from mines as far away as Indonesia and South America.

Other facilities included a former zinc plant, constructed and operated by the Anaconda Minerals Company from 1927 through 1972. The company produced zinc oxide from the lead smelting by-product, slag. The American Chemet Corporation also began producing zinc-based paint pigments in 1947. American Chemet continues to operate, but has modified and upgraded its zinc and copper product lines numerous times over the years. Burlington Northern Railroad and Montana Rail Link also operate rail lines and own or lease property adjacent to the industrial complexes. All five of these companies have been named as potentially responsible parties at this Superfund site.

Operations by these five companies have contributed to the present contamination in East Helena; however, the major contribution came as air emissions from the lead smelting and zinc fuming operations. In addition, storm water runoff and Wilson Ditch (a major irrigation ditch) transported fine-grained concentrates and other contamination from the smelter to residential and undeveloped areas along Prickly Pear Creek and lands served by Wilson Ditch.

Investigations conducted as early as the mid-1980s (and continuing to the present) reveal substantially elevated levels of 18 to 20 elements. All of these elements are found naturally in the Earth's crust, but generally at much lower concentrations. Many of these elements are classified as hazardous substances at the concentrations measured in soils on

and around the smelter, and as far away as several miles downwind or downstream. Lead, arsenic, cadmium, copper and zinc are the elements of concern. Lead, however, is the element of greatest public health concern at the site. Figure 1, Appendix A, shows soils likely to have lead concentrations greater than 1,000 ppm, and between 1,000 ppm and 500 ppm. These boundaries are not clearly defined because over the course of 114 years of emissions, soil lead concentrations can vary depending upon land use, topography and other factors.

2.3 Land Use

Current land uses in East Helena include established residential areas and commercial businesses, newer residential subdivisions and acreage home sites, agricultural lands and open spaces, and industrial facilities (mainly the former Asarco smelter and American Chemet's operating plant). It is anticipated that future land use of existing residential properties will remain residential and that, based on historical growth patterns, new residential subdivisions will be developed on existing agricultural or undeveloped lands. Some of the agricultural lands will remain as productive agricultural resources. Some lands, such as the East Fields, will be used as a soil repository and, consequently, future development may be restricted there.

2.4 Superfund Involvement

In September 1984, EPA listed the site on the National Priorities List (NPL). Asarco conducted numerous investigations to identify soil, groundwater, and surface water impacted by past smelter operations. EPA and MDEQ provided oversight and direction.

In 1987, this large, diverse site was segregated into five operable units:

- Process Ponds and Fluids (including the process ponds and process fluids circuits),
- Surface Soils and Surface Water (including residential and agricultural soils, vegetation and livestock, fish and wildlife, Prickly Pear Creek, and Wilson Ditch),
- Ground Water (beneath the smelter property as well as beyond),
- Slag Pile, and
- Ore Storage Areas.

EPA divided the site into operable units partly to begin work on the process ponds while continuing to study other parts of the site. A Record of Decision (ROD) for the process ponds was issued by EPA in November 1989. Between 1990 and 1995, Asarco conducted the required remedial actions for the process ponds until another enforcement program under EPA's authority, the Resource Conservation and Recovery Act (RCRA) Program, became responsible for the process ponds, ground and surface water, the slag pile and former ore storage areas. The Superfund Program retained responsibilities only for residential soils and agricultural lands.

In March 1990, a comprehensive remedial investigation and feasibility study were completed by Asarco. With regard to residential soil sampling throughout the

community, the remedial investigation included a characterization effort involving sampling at the surface and at depth intervals, generally down to 32 inches. Based on these depth-intergraded samples, EPA concluded that (1) metals, particularly lead, were deposited primarily by aerial deposition, and (2) depth of penetration of the soil profile, by lead and all other elements of concern, generally approaches background concentrations at depths of 18 to 24 inches [EPA 2008d].

In March 1991, in response to EPA's request, Asarco produced a revised and more focused remedial investigation and feasibility study for residential soils, Wilson Ditch, and vegetation. In July 1991, EPA and Asarco entered into a formal agreement to conduct an expedited removal action for residential properties, parks and school playgrounds, unpaved streets and alleys, irrigation ditches and commercial areas. As the removal action proceeded, approximately 1,500 additional yards and other properties were sampled, but mostly surface soil samples were collected (0-1 inch) [EPA 2008d].

Asarco, with EPA and MDEQ oversight and direction, has been removing soils with high concentrations of lead and other contaminants from residential yards, parks, roads, alleys, and street aprons since 1991. Throughout the years, the direction and protocols have been changed to reflect changing and updated information and to expedite the cleanup in a safe and protective, yet cost-effective manner. A number of innovative and experimental approaches to this project have been incorporated into the cleanup.

From 1991 to 2006, the removal action resulted in the cleanup of the following: 620 existing residential yards; 450 sections of alleys, roads, and road aprons; 6 public parks; 2 school playgrounds; 45 commercial and public areas; 4,200 linear feet of irrigation ditch; 150 flood channel and ditch sections; and 36 vacant lots.

2.5 Lead Education and Abatement Program

The Lewis and Clark City-County Health Department provides staff for and administers the East Helena Lead Education and Abatement Program. The program was established in July 1995 and maintains an office in East Helena. It is a multi-pathway lead exposure prevention and risk abatement program. The program promotes environmental assessments in homes, including sampling of yard soil, interior dust, drinking water, and lead-based paint in order to identify all sources of and pathways for lead exposure.

The program provides broad-based education to the public, in homes, day-care centers and schools. Education efforts are focused on nutrition, personal hygiene, health monitoring (blood lead testing) of area children, "safe play" practices, and risk reduction and management. The program provides information to area residents on the need to avoid areas with elevated soil or dust lead levels and to maintain barriers inside and outside the house. It provides information to future purchasers and sellers of property, lending institutions, and realtors regarding both site-wide and individual property-specific conditions. Appendix C provides a copy of the East Helena Lead Education and Abatement Program, Second Program Evaluation [LCCCHD 2005].

2.6 Community Involvement

Since 1984, EPA's public involvement program has included multiple actions to educate local residents and government officials concerning site risks and to inform them about the progress of Superfund activities. Community involvement activities include:

- Regularly scheduled public meetings in East Helena to inform the public and to obtain public input;
- Meetings with the East Helena City Council and Lewis and Clark County Commissioners to provide updates;
- Informal meetings with affected residents concerning the cleanup of their yards;
- Meetings with the East Helena School Board, administrators and teachers, including classroom presentations;
- Regular meetings with two separate citizens' advisory groups;
- Preparation and distribution of fact sheets and educational materials;
- Assistance with blood lead screenings for area children; and
- Ongoing assistance to the Lead Education and Abatement Program.

2.7 Blood Lead Screening

Children's blood lead levels (BLLs) have been a high priority health concern in East Helena. Beginning as early as 1975, and continuing throughout the late 1980s and early 1990s, studies involving children living in and around East Helena demonstrated elevated levels of lead in their blood [CDC 1986, LCCCHD 2005]. Two-thirds of East Helena children tested in 1983 had blood-lead levels greater than 10 micrograms per deciliter ($\mu\text{g}/\text{dL}$).

BLLs of East Helena children have been studied extensively since 1975. In the past, average blood lead values were high and the occurrence of values well above 10 $\mu\text{g}/\text{dL}$ was common (see Table 1, Appendix A). Over time, average levels and the frequency of values above 10 $\mu\text{g}/\text{dL}$ have declined significantly.

Figure 2, Appendix A, reveals a steady decline in East Helena children's BLLs. Since 2001, 531 children were tested and none have exceeded a blood lead level of 10 $\mu\text{g}/\text{dL}$. Of these children, 98% had BLL at or below 4 $\mu\text{g}/\text{dL}$ [EPA 2007a]. The decline of observed BLLs in East Helena children is attributable to several factors. The one most important factor was the continual reduction of airborne lead emissions from the Asarco Lead Smelter. In 1991, Asarco altered its operations, which resulted in a 61% drop in the average lead emissions from the smelter (i.e., reduced average lead emissions from 90,000 pounds per year to approximately 34,700 pounds per year). As particulates in air were significantly reduced in the early 1990s, BLLs also showed significant reductions. In 1999, Asarco again reduced the lead emissions an additional 21%, from 34,700 pounds per year to 16,400 pounds per year. Asarco made its final reduction in 2001, dropping the lead emissions another 18%, from 16,400 pounds per year to 0 pounds per year, and ultimately closed the smelter in April 2001.

Other activities that have helped with the decline in children's BLLs are the East Helena Lead Education and Abatement Program and the cleanup and soil excavation efforts initiated in 1991 that are still ongoing. Additional factors not illustrated in Figure 2, Appendix A, that have influenced children BLLs in East Helena are EPA's National Lead Abatement Program (i.e., national reduction of lead fuel in automobiles and lead paint and plumbing within residential and commercial properties) and a nationwide reduction of dietary lead found in market foods, as inferred by the NHANES III Survey [CDC 1997].

3 Proposed Plan for Cleanup of East Helena's Residential Soils

Since 1984, EPA's public involvement program has included multiple actions to educate local residents and government officials concerning site risks and to inform them about the progress of Superfund activities. As part of the community involvement program, a proposed plan for East Helena residential soils was previously issued in October 1997. However, a Record of Decision was, for several reasons, never finalized. As a result of the lapse in time, and in an effort to provide the community a renewed opportunity to participate in the selection of a final remedy, a new and revised proposed plan was issued in January 2007.

In January 2007, the EPA announced its recommendations and plans for cleaning up the remaining contaminated soils in residential areas within the East Helena Superfund site. Because this health consultation focuses on only two of the proposed alternatives, ATSDR has not summarized all of the potential cleanup alternatives in this section. The following text summarizes the overall components of Alternatives 2R and 3R.

3.1 Overview of Proposed Alternative 2R

Alternative 2R will complete the residential soil cleanup according to protocols that are currently in place for the ongoing removal action [EPA 2007a]. Yards and other properties within residential areas would qualify for cleanup whenever any one (or more than one) sampling section has a composite soil lead concentration above 1,000 ppm lead. Once a yard qualifies, all other sections greater than 500 ppm lead would also be cleaned up.

As has been the practice in East Helena for over 10 years, residential yard soil sampling followed a protocol that required "biased sampling" and incorporation of an "adjustment factor" to the raw analytical results [EPA 2008b]. Approximately 1,500 yards have been sampled using this sampling protocol [EPA 2008d]. Under Alternative 2R, EPA would use these available data to determine which yards to remediate. However, some additional yards may require further sampling efforts, which will follow these historical protocols. EPA did not provide ATSDR with the sampling and analysis plan describing these historical protocols; however, EPA did describe these protocols in several emails to ATSDR staff. These protocols would include [EPA 2008b, EPA 2008d]:

- Sampling Location and Depth: A "biased sampling" method will be used. Sample locations will be selected to locate the highest lead concentrations in each section of the yard. At least 3 of the 5 locations that make up the composite within each

section will be biased to detect the highest lead concentrations. Generally, surface soil samples will be collected (0-1 inch).

- **Yard Sections:** A five-point composite sample will be collected from each section. Small to medium yards will be divided into 4 sections. However, any yard larger than 14,400 square feet in area (about 1/3 of an acre) must be subdivided into 60 by 60 foot sections. It is estimated that the yards in East Helena's outlying subdivisions will have 8 to 12 sections. Some will have as many as 16 (or more) sections. Thus, in a yard divided into 12 sections, 60 individual soil samples will be taken and 36 or more of them must be biased for locating the highest lead concentrations.
- **Sample Analysis:** After the composited samples are analyzed, by standard laboratory procedures, the Montana Office will apply a statistical certainty factor, or "adjustment factor", to the raw analytical results. For example, a property with a raw reading for one section of 717 ppm could, after applying the adjustment factor to achieve the upper 95th percentile confidence, have a reported concentration of 836 ppm lead [EPA 2008b]. Reporting the 95th percentile results in a more conservative estimate of the soil concentration.

EPA indicated that Alternative 2R has these conservative practices "built in" and that they will be retained if Alternative 2R is selected as the remedial action [EPA 2008b].

Also under Alternative 2R, the county would continue to administer the East Helena Lead Education and Abatement Program for as long as necessary. In addition, institutional controls would be developed and administered by the local government to protect against recontamination of areas cleaned up and assure that protective regulations and policies are adhered to.

In January 2007, the Superfund Program estimated that approximately 100-110 existing residential yards would qualify for remediation under Alternative 2R. In its January 2007 proposed plan, EPA chose Alternative 2R as the preferred cleanup alternative for contaminated soils in existing residential areas. EPA recommended Alternative 2R because it is patterned after the residential soil removal action that has been in place since 1991. EPA believes that the removal action has proven to be safe, effective, and protective of children's health, and will satisfy applicable or relevant and appropriate legal requirements (ARARs). EPA stated that Alternative 2R represents a cost-effective approach to cleanup with the least amount of disturbance or environmental consequence [EPA 2007a].

For additional information regarding this cleanup alternative, as presented in EPA's January 2007 proposed plan for cleaning contaminated surface soils in East Helena, please refer to Appendix B.

3.2 Overview of Proposed Alternative 3R

For Alternative 3R, when soil sampling indicates that a parcel of residential property has an average soil lead concentration greater than 500 ppm, all soils of that property would be excavated. Under Alternative 3R, the same community education and institutional control components discussed for Alternative 2R would apply.

Although not stated in the January 2007 proposed plan, it is ATSDR's understanding that EPA first assumed Alternative 3R would follow the same sampling protocol as Alternative 2R (i.e., historical protocols) [ATSDR 2008d]; however, EPA is currently considering following the sampling protocols described in EPA's 2003 Superfund Lead-Contaminated Residential Sites Handbook instead [EPA 2008d]. All of the existing non-remediated residential properties within a radius of approximately 2.5 miles from the smelter would require additional sampling (see Figure 1, Appendix A, and note the probability of locating properties with soils greater than 500 ppm lead) [EPA 2007a]. According to the 2003 handbook, residential yard soil sampling protocols include [EPA 2003]:

- Sampling Location and Depth: One five-point composite of aliquots collected at equal spacing and from the same depth interval should be obtained from each section. Composite samples should be collected at 6 inch depth intervals, i.e., 0-6 inches, 6-12 inches, 12-18 inches, and 18-24 inches. Each aliquot should be collected away from influences of the drip zone and any other painted surfaces.
- Yard Sections: For residential yards with a total surface area less than 5,000 square feet, a five-point composite samples should, at a minimum, be collected from each of the following locations—the front yard, the back yard, and the side yard (if the size of the latter is substantial). For residential yards with a total surface area greater than 5,000 square feet, the property should be divided into four quadrants of roughly equal surface area. Properties over one acre in size should be divided into 1/4 acre sections. In addition, soil samples should also be collected from distinct play areas and gardens if they are present.
- Sample Analysis: Compositated samples will be analyzed by standard laboratory procedures.

In the January 2007 proposed plan, EPA estimated that approximately 900 existing residential yards would qualify for remediation under Alternative 3R. Although EPA considers Alternative 3R protective of public health, EPA did not choose Alternative 3R as the preferred cleanup alternative for contaminated soils in existing residential areas in its January 2007 proposed plan.

For additional information regarding this cleanup alternative, as presented in EPA's January 2007 proposed plan for cleaning contaminated surface soils in East Helena, please refer to Appendix B.

4 Discussion

East Helena residents are exposed to lead contaminated surface soil in their residential yards. Exposure to soil occurs primarily through dermal contact. In addition, people might accidentally ingest soil as well as dust that is generated from disturbing the soil. Preschool age children tend to swallow more soil or dust than do any other age group because they have more contact with soil through their play activities, they tend to exhibit mouthing of objects, and some exhibit pica behavior. Pica behavior refers to the intentional ingestion of non-food items, such as soil. Children in elementary school, teenagers, and adults tend to swallow much smaller amounts of soil or dust. The amount

of grass cover in an area, the amount of time spent outdoors, and weather conditions also influence people's exposure to soil.

For the East Helena Superfund site, there are elevated lead levels in soil. This health consultation evaluates two alternatives proposed by EPA for cleaning up the remaining lead-contaminated soil. In the following text, ATSDR evaluates several components of each alternative: community education and intervention, institutional controls, soil sampling protocols, and lead cleanup levels. Other considerations are also acknowledged, such as the impact of heavy construction on the community.

4.1 Community Education and Intervention

When lead contamination is identified at a site, remedial actions usually include community health education and intervention. It is difficult to document the impact of health education, by itself, since it is usually done in concert with source removal and abatement. Nevertheless, there is some evidence that community-wide education and intervention have been partly responsible for declines in community blood lead levels [Hilts et al. 1998].

Under both Alternatives 2R and 3R, the Lewis and Clark City-County-administered Lead Education and Abatement Program will continue to operate within the community for as long as needed to protect children from exposures to residual levels of lead. Currently, Asarco is funding this program, with county health professionals stationed within the community and its schools [EPA 2008a]. As described in Section 2.5, the program provides broad-based education to the public, in homes, day-care centers and schools. The focus of education is on nutrition, hygiene, continued health monitoring (blood lead testing) of the area's children, "safe play" programs, and continued risk reduction. Also as mentioned in Section 2.5, the program provides information to future purchasers and sellers of property, lending institutions, and realtors regarding both site-wide and individual property-specific conditions. Further details regarding this program can be found in Appendix C, which provides a copy of the East Helena Lead Education and Abatement Program, Second Program Evaluation [LCCCHD 2005].

In 1999 and 2005, the program's effectiveness was reviewed using door to door surveys, focus groups, and other evaluation methods [LCCCHD 2005]. During both reviews, the program received high grades for its performance. ATSDR's review found the program's goals and accomplishments to be comprehensive and far-reaching. For the East Helena community, there appears to be a heightened awareness regarding lead exposures. Although the most likely reasons for the substantial reduction in children's BLLs over the years were the reduction of airborne lead emissions and the subsequent closure of the Asarco Smelter, other actions that have helped with the decline include the Lead Education and Abatement Program's activities. ATSDR believes the program is effective because activities such as community health education are combined with other measures such as BLL testing and in-home environmental assessments (see Appendix C). Because there will always be residual levels of lead in East Helena, regardless of the cleanup alternative chosen, ATSDR finds the Lead Education and Abatement Program to be a critical and necessary component in the protection of public health as outlined in the January 2007 proposed plan for Alternatives 2R and 3R.

4.2 Institutional Controls

Institutional controls (ICs) are legal and administrative tools used to maintain protection of human health at sites. ICs are often a part of the remedy at a site. ICs can be used to restrict site use, modify behavior, and provide information to people. Because there may be residual contamination at the site, ICs are a way to insure the protection of public health [ATSDR 2007b].

As described in the January 2007 proposed plan, the ICs for the East Helena Superfund site are:

- Adopt and administer local regulations designed to reduce opportunities for recontamination of areas already cleaned up;
- Adopt and administer regulations that require, or policies that encourage, coordination of planning and zoning efforts (East Helena city government, Lewis and Clark County Health Board, Lewis and Clark County Planning and Zoning Commission);
- Continue to provide oversight of cleanup activities and monitor areas previously cleaned up; and
- Administer restrictions and requirements at the EPA-approved soils repository.

The Lewis and Clark City-County-administered Lead Education and Abatement Program will, after a final remedy is selected and a Record of Decision is issued, administer institutional controls and associated guidelines [EPA 2007a]. However, ATSDR cautions that the success of an IC is dependent on implementation, monitoring, and enforcement activities. Therefore, success depends on the commitment of the local government entities, who may have some overlapping responsibility for an IC, to work together. Provided that the local government entities work together to implement, monitor, and enforce appropriate and feasible regulations, ATSDR finds the general ICs to be a critical and necessary component in the protection of public health as outlined in the January 2007 proposed plan for Alternatives 2R and 3R.

4.3 Soil Sampling Protocols

For each residential yard, the overall goal of sampling is to estimate an average soil lead concentration that can be used to determine whether the yard, or a section of the yard, requires cleanup actions. During the development of its 2003 Superfund Lead-Contaminated Residential Sites Handbook, EPA reviewed various sampling designs historically employed at lead-contaminated residential sites and assessed the ability of these sampling designs to support the development of cleanup levels [EPA 2003]. In the 2003 handbook, EPA proposed a sampling strategy the agency felt would promote consistent procedures, criteria and goals in the investigation of lead-contaminated residential sites.

Although not described in the January 2007 proposed plan for East Helena, it is ATSDR's understanding that Alternative 3R might follow the same sampling protocol as outlined in EPA's 2003 handbook. As such, ATSDR finds that the sampling protocol of

Alternative 3R would support the identification of residential yards that may require cleanup actions due to elevated lead levels if the EPA 2003 handbook is followed.

Alternative 2R will follow the historical sampling protocols that have been in practice at the East Helena site for over 10 years. At this time, it is unclear to ATSDR whether Alternative 3R will follow these historical sampling protocols, although there is that possibility. The historical sampling protocols used in East Helena were developed and instituted before EPA released its 2003 handbook and therefore do not follow the 2003 handbook sampling protocols.

Based on the information provided to ATSDR for this health consultation, the major differences between the sampling protocols appear to be that the historical protocols require "biased sampling" and the incorporation of an "adjustment factor" to the raw analytical results whereas the 2003 handbook sampling protocols do not require these measures [EPA 2008b]. It also appears the historical sampling protocol results in more sections per yard than the 2003 handbook sampling protocol. In addition, historical protocols have concentrated sampling efforts on top soil (0-1 inch). ATSDR notes that people are generally exposed to only the top inches of soil [ATSDR 1994].

Overall, ATSDR believes that these differences in historical sampling protocols would most likely result in higher lead concentrations being found in top soil. Because Alternative 2R follows historical protocols, ATSDR finds that Alternative 2R's sampling protocol supports the identification of residential yards that may require cleanup actions due to elevated lead levels. Similarly, ATSDR finds that Alternative 3R's sampling protocol would support the identification of residential yards that may require cleanup actions due to elevated lead levels if historical protocols are followed.

4.4 Lead Cleanup Levels

As previously mentioned, neither ATSDR nor the EPA has developed a MRL or RfD for exposure to lead. Therefore, the usual approach of estimating exposure to an environmental contaminant and then comparing this dose to a health guideline (such as an RfD or MRL) cannot be used. Instead, exposure to lead is evaluated by using a biological model that predicts a blood lead concentration that would result from exposure to environmental lead contamination. The most widely used model for this purpose is EPA's Integrated Exposure Uptake Biokinetic Model for Lead in Children (IEUBK) model.

The IEUBK model is designed to integrate exposure from lead in air, water, soil, dust, diet, paint, and other sources with pharmacokinetic modeling to predict blood lead concentrations in children 6 months to 7 years of age. The four main components of the current IEUBK model are: (1) an exposure model that relates environmental lead concentrations to age-dependent intake of lead into the gastrointestinal tract; (2) an absorption model that relates lead intake into the gastrointestinal tract and lead uptake into the blood; (3) a biokinetic model that relates lead uptake in the blood to the concentrations of lead in several organ and tissue compartments; and (4) a model for uncertainty in exposure and for population variability in absorption and biokinetics [EPA 1994].

The IEUBK model results can be a tool for the determination of site-specific cleanup levels. In this context, the model is viewed as a predictive tool for estimating changes in blood concentrations as exposures are modified [EPA 1994]. In setting a soil lead cleanup level at a site, EPA's goal is to "limit exposure to soil lead levels such that a typical (or hypothetical) child or group of similarly exposed children would have an estimated risk of no more than 5% of exceeding a blood lead level of 10 µg/dL" [EPA 1998].

The IEUBK model provides choices a user may make in estimating a child's blood lead concentration. These are referred to "user-specified" parameters or decisions. The reliability of the results obtained using the model is very dependent on the selection of the various coefficients and default values that were used.

The use of solely default parameters in the IEUBK model yields a soil lead level of about 400 ppm, which EPA recommends as a screening level for lead in soil at residential properties [EPA 1998]. Using a combination of default assumptions and site-specific information on lead relative bioavailability (RBA) and soil to dust ratios obtained at East Helena, the model-predicted lead level is estimated to be 520 ppm [EPA 2007b]. For this health consultation, the model-derived values are only one aspect considered when determining whether a cleanup level is protective of public health at East Helena. Other important aspects factored into ATSDR's evaluation of cleanup levels for the East Helena Superfund site include the site's history, BLL data, community education and intervention, and institutional controls.

Alternative 2R proposes cleanup of residential yards when any one section has soil lead greater than 1,000 ppm. Once a yard qualifies, all sections of the yard above 500 ppm will be cleaned up. Overall, with the continuation of the Lead Education and Abatement Program and the adoption and enforcement of appropriate and feasible institutional controls, ATSDR finds the lead levels that trigger cleanup in Alternative 2R protective of public health. The following text documents several factors considered in ATSDR's evaluation:

1. Site history: Beginning in 1991, Asarco altered its operations, which resulted in a 61% drop in the average lead emissions from the smelter. As particulates in air were significantly reduced in the early 1990s in East Helena, children's BLLs also showed significant reductions. Similarly, another smelter in Trail, British Columbia, showed a rapid decline in children's BLLs levels following reductions in air lead levels [Hilts 2003]. In 1999 and 2001, Asarco again reduced lead emissions. In April 2001, the smelter closed, thereby stopping a major source of lead contamination in East Helena.

Since 1991, there has been ongoing removal of soils with high concentrations of lead from residential yards. The lead levels that trigger cleanup proposed in Alternative 2R are the same as the levels used to trigger cleanup during past residential yard removal actions. Furthermore, the comprehensive Lead Education and Abatement Program, which was established in 1995, is an ongoing program. Overall, a review of the site's history has shown a continued decline in adverse impacts of lead-contamination on public health for the East Helena community. As long as all critical components of the January 2007 proposed plan are maintained in the final remedy, ATSDR finds that the site's history supports the

public health protectiveness of Alternative 2R's lead cleanup levels, which have been used to trigger cleanup actions at the East Helena site for many years.

2. Blood lead data: As stated in ATSDR's guidance, blood lead data, by itself, should not be the sole basis for determining whether lead contamination at a site poses a hazard [ATSDR 2007a]. Blood lead levels reflect exposure for the time period in which the children were tested, but it may not be representative of past or future exposures for different children. Therefore, when comparing the results of blood lead screening to estimated results from the IEUBK model, ATSDR considers items such as whether the blood lead data are representative of the community [ATSDR 2007a]. Although ATSDR did not perform its own review of the BLL data, an EPA analysis found that based on consideration of participation rates, narrowing bands of statistical uncertainty over time, spatial representativeness, and soil lead representativeness, a high level of confidence exists in the blood lead data generated by the County-administered program. The EPA analysis concluded that these long-term data are reliable and appropriate for use by risk managers and other health professionals in assessing conditions in East Helena and for setting a protective soil lead cleanup level [EPA 2007b].

Application of the IEUBK model indicates the recommended default parameters can over-predict BLLs when site-specific data are not used [von Linder et al. 2003]. Alternative 2R's lead cleanup levels (1,000/500 ppm lead) are above the IEUBK model-derived default soil lead cleanup level of about 400 ppm.

However, for East Helena, the average BLLs and the frequency of values above 10 µg/dL have declined significantly over time. Since 2001, 531 children were tested and no children have had blood lead levels above 10 µg/dL. Of these children, 98% had BLL at or below 4 µg/dL [EPA 2007a]. As mentioned previously, there is some evidence that community-wide education and intervention have been partly responsible for declines in community blood lead levels [Hilts et al. 1998]. As long as all critical components (like community education) are maintained in the final remedy, ATSDR finds that these BLL data support the public health protectiveness of Alternative 2R's lead cleanup levels, which have been used to trigger cleanup actions at the East Helena site for many years.

3. Community education and intervention: As described in Section 4.1, ATSDR found the Lead Education Abatement Program's goals and accomplishments to be comprehensive and far-reaching. For example, under the program, whenever blood lead tests of a child and a follow-up environmental assessment of a home demonstrate that exposure to lead in the soils of that yard is responsible for a blood lead level above 10 µg/dL, then that yard would qualify for immediate remedial action irrespective of the yard soil lead concentration [EPA 2007a]. Also, the program offers free BLL testing and free environmental lead hazard assessments (i.e. water, soil, dust, paint, hobbies) to all East Helena area residents upon request [EPA 2007b]. Overall, ATSDR finds that the public health protectiveness of Alternative 2R is greatly enhanced by the Lead Education and Abatement Program.

4. Institutional controls: As described in Section 4.2, ATSDR found that the general ICs outlined in the January 2007 proposed plan are protective of public health. According to the January 2007 proposed plan, these ICs could include regulations needed to (a) prevent disturbances of contaminated soils that remain in and around East Helena and (b) prevent exposures to interior household dust (attics, unfinished basements, heating ducts, etc.) during remodeling or demolition [EPA 2007a]. Overall, ATSDR finds that the public health protectiveness of Alternative 2R will be greatly enhanced by the adoption and enforcement of appropriate and feasible regulations.

Overall, as long as the aforementioned critical components are maintained in the final cleanup remedy, ATSDR finds the lead levels that trigger cleanup as outlined in the January 2007 proposed plan for Alternative 2R to be protective of public health.

Alternative 3R proposes cleanup of yards when soil sampling indicates that a residential property has an average soil lead concentration greater than 500 ppm. All soils of that property would be excavated. Under Alternative 3R, the same community education and institutional control components discussed for Alternative 2R would apply. Although Alternative 3R's lead cleanup level (500 ppm lead) is above the IEUBK model-derived default soil lead cleanup level of about 400 ppm, ATSDR believes the site's history and BLL data would also support the protectiveness of this alternative over time. Therefore, as long as all critical components of the January 2007 proposed plan are maintained in the final remedy, ATSDR finds the lead level that triggers cleanup of residential yards for Alternative 3R to be protective of public health as well.

4.5 Other Considerations

The choice between various cleanup alternatives is ultimately a risk management decision. At lead-contaminated residential sites, a variety of considerations are evaluated to determine the best site-specific alternative. For this health consultation, ATSDR evaluated specific environmental health aspects of Alternatives 2R and 3R to determine whether the alternatives are protective of human health. However, the agency acknowledges that many other considerations not evaluated in this health consultation must be addressed by risk managers in the final selection of a cleanup alternative. For example, ATSDR acknowledges that the heavy construction associated with cleaning up yards will impact the community. That is, the operation of heavy equipment, dump trucks, street sweepers, etc., in yards where young children reside can present a substantial risk to their physical safety, regardless of the cleanup alternative chosen.

Another consideration is the accuracy of the lead boundary lines noted in Figure 1, Appendix A. This figure, developed by EPA, shows soils likely to have lead concentrations greater than 1,000 ppm, and between 1,000 ppm and 500 ppm. However, EPA states that these boundaries are not clearly defined and that relatively little sampling has been done outside the red boundary line [EPA 2007a, EPA 2008d]. ATSDR finds that regardless of the cleanup alternative chosen, additional efforts to characterize the extent of lead contamination may be warranted.

Lastly, although ATSDR did not review original site documents in some instances, such as the historical sampling and analysis plan, the agency has assumed for the purpose of

this health consultation that the information provided by EPA to ATSDR in emails is accurate and reliable. ATSDR acknowledges that our analyses, conclusions, and recommendations are valid only if the information we received to evaluate are complete and reliable.

5 Child Health Considerations

ATSDR recognizes the unique vulnerabilities of children from exposure to hazardous substances in their environment. Children are at greater risk than are adults from certain kinds of exposures to hazardous substances because they often have greater exposure than do adults. For instance, children frequently play outdoors and are more likely to come in contact with soil than are adults. Children are more likely to get dirt on their hands, and are more likely to swallow some of that dirt if they do not wash their hands properly before eating. Children are also smaller than adults, resulting in higher doses of chemical exposure per body weight. Most important, children depend completely on adults for risk identification and management decisions, housing decisions, and access to medical care. Consequently, whenever soil is a pathway of concern—as it is in East Helena—children will have greater exposure to substances in the soil than will adults. For this reason, sampling and cleanup efforts in East Helena have been prioritized for yards where children resided.

As mentioned previously, children with soil pica behavior are of particular concern because they could possibly have significant exposures to lead-contaminated soil. Because there will always be residual levels of lead in East Helena, regardless of the cleanup alternative chosen, ATSDR finds the Lead Education and Abatement Program to be a critical and necessary component in the protection of children's health for Alternatives 2R and 3R. The planned institutional controls are also a critical and necessary component in the protection of children's health for Alternatives 2R and 3R. Overall, ATSDR finds Alternatives 2R and 3R protective of public health, including children, as long as these critical components are maintained in the final cleanup remedy.

6 Conclusions

ATSDR understands that a level of flexibility is needed to best respond to different site conditions, communities, and uncertainties at lead-contaminated residential sites. For this health consultation, ATSDR evaluated the environmental health aspects of proposed cleanup Alternatives 2R and 3R for the East Helena Superfund site to determine whether the alternatives are protective of human health. ATSDR has reached the following specific conclusions:

- Because there will always be residual levels of lead in East Helena, ATSDR finds that the Lead Education and Abatement Program is a critical and necessary component in the protection of public health as outlined in the January 2007 proposed plan for Alternatives 2R and 3R.
- Provided that local government entities work together to implement, monitor, and enforce appropriate and feasible regulations, ATSDR finds the general institutional controls are a critical and necessary component in the protection of

public health as outlined in the January 2007 proposed plan for Alternatives 2R and 3R.

- ATSDR finds the sampling protocols associated with Alternatives 2R and 3R support the identification of residential yards that may require cleanup actions due to elevated lead levels.
- As long as the aforementioned critical components are maintained in the final cleanup remedy, ATSDR finds the lead levels that trigger cleanup as outlined in the January 2007 proposed plan for Alternatives 2R and 3R to be protective of public health.
- Because relatively little sampling has been done outside the red boundary line (see Figure 1, Appendix A), ATSDR finds that regardless of the cleanup alternative chosen, additional efforts to characterize the extent of lead contamination may be warranted.

Overall, ATSDR concludes the proposed cleanup Alternatives 2R and 3R for lead contamination in existing residential areas are protective of public health.

7 Recommendations

1. Because ATSDR's evaluation of the protectiveness of both Alternatives 2R and 3R is dependent on the continuation of the Lead Education and Abatement Program and the adoption and enforcement of appropriate and feasible institutional controls, ATSDR recommends these critical components are maintained in the final cleanup remedy.
2. Because relatively little sampling has been done outside the red boundary line (see Figure 1, Appendix A), ATSDR recommends that additional efforts to characterize the extent of lead contamination be considered regardless of the cleanup alternative chosen.

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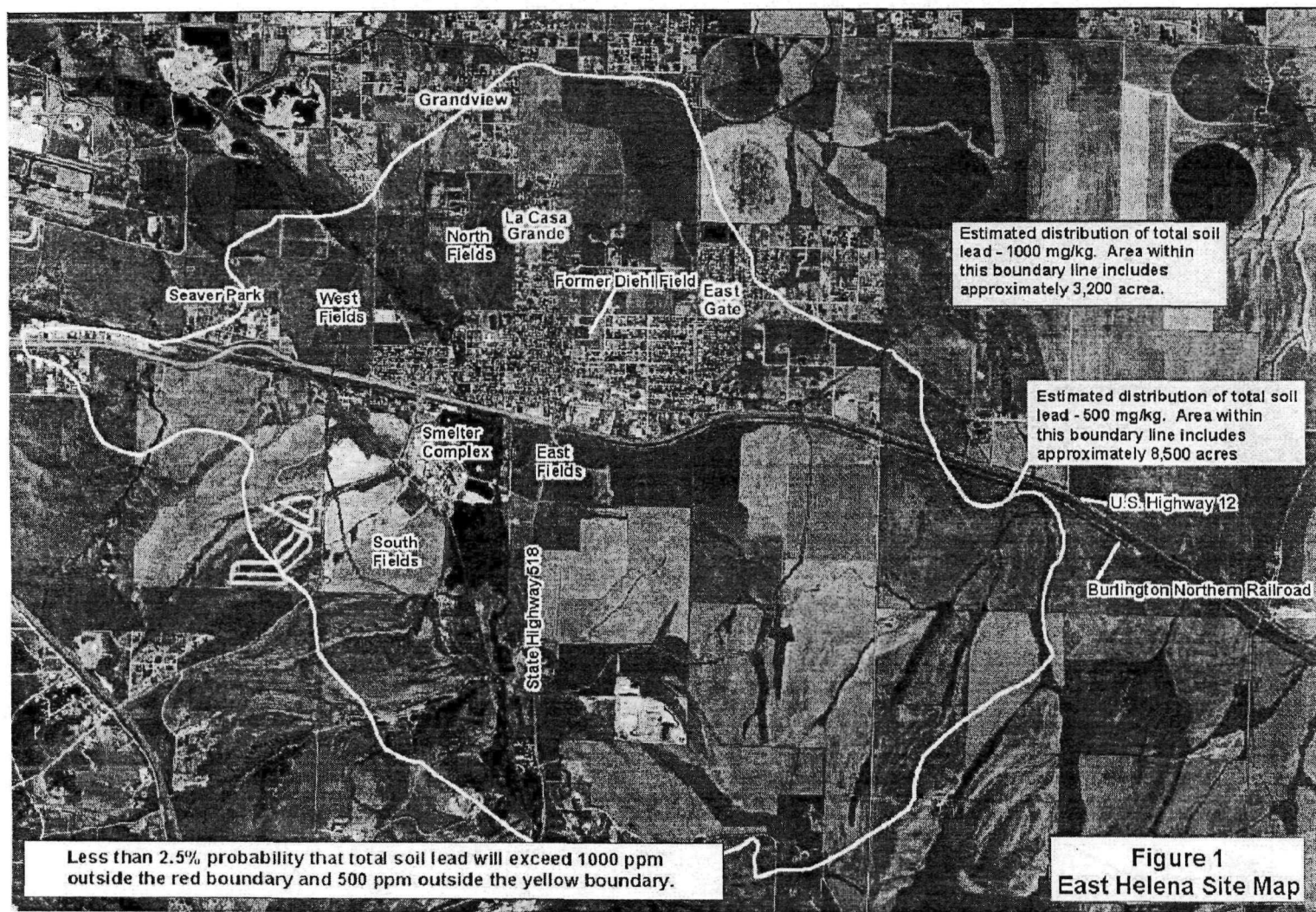
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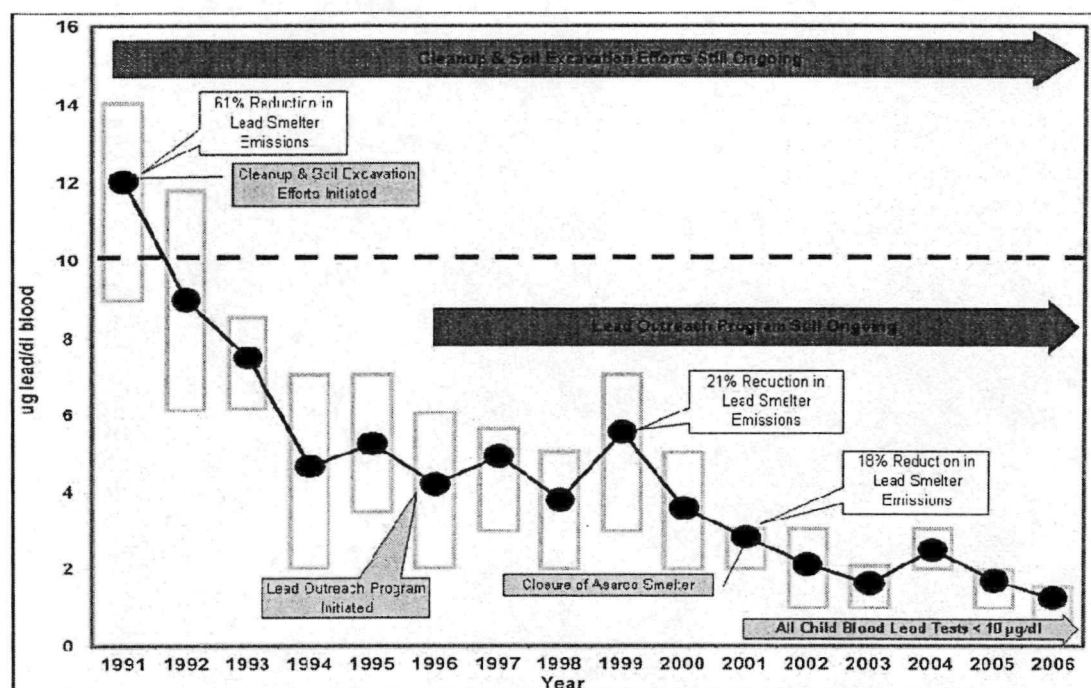
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Appendix A—Figures and Tables



Source: courtesy of EPA 2007a

Figure 2. Children's Average (●) Blood Lead Concentrations from 1991 through 2006



Source: courtesy of EPA 2007a, LCCHD 2005

Figure notes:

Rectangles represent the central 50% of the concentration data

µg = micrograms

dL = deciliter

Table 1. Blood Lead Levels of East Helena Children 6 to 72 Months of Age (1975-2006)

| Year | No. of children tested | No. with lead-in blood levels 10 µg/dl or greater | Average (µg/dl) | Relative Prevalance (%) of blood lead levels greater than 10 µg/dl |
|---------------------------------------------------------------|------------------------|---------------------------------------------------|-----------------|--------------------------------------------------------------------|
| 1975 | 90 | 90 | 28 | 100 |
| 1983 | 98* | 87 | 14 | 88.4 |
| 1991-92 | 23 | 11 | 10.2 | 47.8 |
| 1993-94 | 38 | 2 | 5.5 | 5.8 |
| 1995-98 | 157 | 2 | 4.7 | 1.3 |
| 1997-98 | 185 | 7 | 4.2 | 3.8 |
| 1999-00 | 188 | 5 | 4.1 | 2.7 |
| 2001-02 | 130 | 0 | 2.8 | 0 |
| 2003-04 | 254 | 0 | 2 | 0 |
| 2005 | 10 | 0 | 1.7 | 0 |
| 2008 | 137 | 0 | 1.3 | 0 |
| *Ninety-eight children residing within 1 mile of the smelter. | | | | |

Source: EPA 2007a

Table notes:

µg = micrograms
 dL = deciliter

Appendix B—Cleanup Alternatives 2R and 3R

Cleanup Alternatives 2R and 3R

The following paragraphs provide documentation regarding yard remediation under the cleanup Alternatives 2R and 3R, as presented in EPA's January 2007 proposed plan for cleaning up lead and arsenic contaminated surface soils in East Helena, Montana [EPA 2007a].

Alternative 2R—Selected Soil Removal (1,000/500 ppm lead), Continuing Community Education, and Institutional Controls

Cost—\$ 10 million (net present value)

Time to Implement—2 years after EPA issues a Record of Decision

Under Alternative 2R, the remedy would consist of completing the residential soil cleanup according to protocols that are currently in place for the ongoing removal action. All remaining residential yards, vacant lots near residences, and unpaved areas such as streets and alleys within residential areas, that qualify under current protocols for the ongoing residential soil removal action, would be cleaned up. The county administered, community-wide education program, designed to monitor and protect children against exposures to residual lead, would be continued for as long as necessary. And, institutional controls would be developed and administered by local government to protect against recontamination of areas cleaned up and assure that protective regulations and policies are adhered to.

Under Alternative 2R, yards and other properties within residential areas would qualify for cleanup whenever any one (or more than one) sampling section, or quadrant, is above 1,000 ppm lead. Once a yard qualifies, all other sections (or quadrants) that are above 500 ppm lead would also be cleaned up.

The following further defines how Alternative 2R would be implemented.

- Where soil sampling indicates that any section or quadrant of a residential property qualifies that property for cleanup (i.e., at least one section greater than 1,000 ppm lead), all sections greater than 500 ppm lead would be excavated, placed into dump trucks that can be covered, hauled to the East Fields soil repository and disposed of by means of land application over ground that was severely impacted by past smelter emissions. Qualified yards where young children reside receive first priority each construction season.
- Unpaved roads, alleys and aprons that are adjacent to qualified properties would be excavated at the same time, under the same protocols.
- Soils would be excavated to a depth of 18 inches, or until all remaining lead concentrations, after excavation, are less than 500 ppm, whichever occurs first.
- Clean topsoil, generally mined from farmlands in the Helena Valley, would be used to backfill the areas from which soils are removed. Sod or reseedling,

replacement of shrubs, and other actions would be implemented in order to restore the property to its pre-response action condition.

- Whenever blood lead tests of a child and a follow-up environmental assessment of a home by health professionals demonstrate that exposure to lead in the soils of that yard is responsible for a blood lead level above 10 µg/dL, then that yard qualifies for immediate remedial action irrespective of the yard soil lead concentration.
- In the unlikely circumstances where a yard average soil arsenic concentration exceeds 176 ppm, but the yard does not otherwise qualify (e.g., no quadrant above 1,000 ppm lead), then the yard qualifies for remedial action.

An estimated 100 to 110 residential yards and 9 vacant lots, as well as their adjacent unpaved roads, aprons and alleys, are known to qualify for cleanup under Alternative 2R. It is anticipated that approximately 2 years would be required to clean up all remaining qualifying residential properties after EPA issues a Record of Decision.

Alternative 3R—Selected Soil Removal (500 ppm lead), Continuing Community Education, and Institutional Controls

Cost—\$38 million (net present value)

Time to Implement—5 to 7 years after EPA issues a Record of Decision

Under Alternative 3R, the remedy would consist of completing the residential soil cleanup according to revised, more stringent protocols than are currently in place for the ongoing removal action. All remaining residential yards, vacant lots, and unpaved areas such as streets and alleys, that would qualify under the revised protocols, would be cleaned up. The county administered, community-wide education program, designed to protect against exposures to residual lead, would continue for as long as necessary. Institutional controls would be developed and administered by local government to protect against recontamination of areas cleaned up and assure that protective regulations and policies are adhered to.

Under this alternative, yards and all other properties, including unpaved streets, alleys and open areas within residential areas, would qualify for cleanup whenever the property average lead concentration is above 500 ppm. Once a property qualifies under this alternative, the entire property would be cleaned up.

The following details further define how Alternative 3R would be implemented.

- Where soil sampling indicates that a parcel of residential property has an average soil lead concentration greater than 500 ppm, all soils of that property would be excavated, placed into dump trucks that can be covered, hauled to the East Fields soil repository and disposed of by means of land application over ground that was severely impacted by past smelter emissions.

- All unpaved roads, alleys, aprons, commercial areas, and vacant residential lots or open areas within residential areas, that have an average soil lead concentration above 500 ppm, would be cleaned up.
- Soils would be excavated to a depth of 18 inches, or until all remaining lead concentrations are less than 500 ppm, whichever occurs first.
- Clean topsoil, generally mined from farmlands in the Helena Valley, would be used to backfill the areas from which soils are removed. Sod or reseedling, replacement of shrubs, and other actions would be implemented in order to restore the property to its pre-response action condition.
- Whenever blood lead tests of a child and a follow-up environmental assessment of a home, performed by health professionals, demonstrate that exposure to lead in the soils of that yard is responsible for a blood lead level above 10 µg/dL, then that yard qualifies for immediate remedial action, irrespective of the yard soil lead concentration.
- In the unlikely circumstances where a yard average soil arsenic concentration exceeds 176 ppm, but the yard average soil lead concentration does not exceed 500 ppm, then the yard qualifies for remedial action.

It is estimated that approximately 900 yards, lots, and open areas would qualify for remedial action under Alternative 3R. This estimate has some associated uncertainty because all existing residential properties within a radius of approximately 2.5 miles from the smelter would require pre-sampling. (See Figure 1 in Appendix B and note the probability of locating properties with soils greater than 500 ppm lead.) Extensive additional pre-sampling and the estimated number of properties that are likely to qualify under Alternative 3R result in an estimated time of construction of 5 to 7 years, after a Record of Decision is issued by EPA.

Appendix C—East Helena Lead Education and Abatement Program, Second Program Evaluation

EAST HELENA LEAD EDUCATION AND ABATEMENT PROGRAM
SECOND PROGRAM EVALUATION

MAY 3, 2005

Prepared by:

**Lewis and Clark City/County Health Department
Resource Development Division and
East Helena Lead Education and Abatement Program**

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Lead Education & Abatement Program's 2nd Five-Year Review

- 1.3** From the last Five Year Review the program put together a Five Year Work Plan. The program continues to implement the following components of the Work Plan:

1. Health Intervention and Prevention Program

Identify children and others in East Helena area that may have a potential for negative effects as a result of exposure to environmental lead. The program staff continues to expand its efforts in finding children and pregnant women who are at risk of lead exposure.

Children 6 years and younger are at a greater risk to lead exposure than older children and adults and the program continues to try new methods of reaching these children. One such method involved the Women, Infants and Children (WIC) program.

In 2004, 298 postcards were sent out to all participants of the WIC program who lived in the East Helena Area. Approximately 17 % of all the postcards were returned due to change of address and no forwarding address in place. At the screenings many of the participants stated that they had received a postcard in the mail and that was how they learned of the screening. The program felt that the postcards sent were a good resource in reaching parents of young children and continues yearly outreach in this manner.

Monitor Blood Lead Levels in children. The program continues to input all information from the lead screenings held each year into a database. The information has been used in creating maps to determine if there are trends of participation rates for different areas of the community. Along with the participation rates the information is also used to determine the percentages for repeat screenings. The program continues to use the information from the database in creating maps and charts.

Coordinate with Montana Lead (CDC-funded) Program on childhood blood lead monitoring. The program reported all blood-lead levels to the Montana Lead Program. This blood-lead data was put into a larger database and the state analyzed the information to determine what kind of trends were happening statewide with regards to blood-lead levels in children.

The Montana Lead Program lost its funding in 2001 and has not received any additional funding at this time. The state laboratory continues to report all blood-lead levels in children to the Department of Public Health and Human Services (DPHHS). The DPHHS would like to have a tracking system in place for environmental health issues; which would include childhood blood lead levels. Funding for the new system has not been explored as of yet.

Coordinate with the Lead Awareness Program (HUD-funded) to raise community awareness of lead-related health issues. The program worked in conjunction with the Lead Awareness Program in promoting safety around lead. The two programs shared educational resources and presentations.

The Lead Awareness Program screened all children in Lewis & Clark County, while the East Helena Lead Education Program screened children in the East Helena Superfund area. The East Helena Program found five children with elevated blood lead levels through their screenings held in 2000. In contrast, the Lead Awareness Program found only one child with elevated blood lead levels in the two years they held screenings countywide. The Lead Awareness Program was a two-year grant from HUD. Lewis & Clark County was not eligible for additional funding.

Survey the various sectors of the community to determine the effectiveness of the program and make program adjustments as indicated. The program held four focus groups in December of 2004. The groups were broken into different target groups: East Helena residents, East Helena business owners, East Helena area residents (outside the City of East Helena) and East Helena elected officials. The results of these focus groups will be addressed in a separate chapter of this report.

Institutional Controls in the Superfund site. The program, at this time is not able to implement any Institutional Controls (ICs) for the East Helena Superfund Site. In order for the county to adopt any controls the EPA would have to incorporate the ICs in the Record Of Decision (ROD). The EPA has not released a ROD for East Helena at this time. The IC's are on hold until further decisions are made concerning the ROD.

Although the IC's are on hold the Program encourages citizens of East Helena to voluntarily dispose of excess soil from building projects to the East Fields, which is a designated repository for contaminated soils. The repository was created, by ASARCO, when remediation of East Helena yards began. ASARCO allows all citizens to use the repository at no charge.

Establish a system of tracking data related to residential soils and residents blood lead levels (intending to use a Geographic Information System). The program staff continues to use the database in creating maps depicting areas of high, medium and low soil lead concentrations and blood lead levels of children screened in those areas. The program staff currently is working on a map representing the location of all children screened over the past 10 years and locations of available soil lead levels.

Project Management, Organization and Schedule

Maintain a Program office, which is accessible to the public for information, and occasionally for blood lead screenings. Lewis & Clark City-County Health Department continues to maintain an office in the City of East Helena. This office provides ready access to the local residents.

Staff the Program appropriately to deliver consistent service to the community. The program has undergone a number of changes with regards to staffing. Currently the program employs two $\frac{3}{4}$ time Environmental Health Specialists who are available throughout the week. The number of staff working, at this time, is sufficient for the office to maintain consistent service to the public.

Explore additional funding streams leveraging current funding to enhance program activities. The program staff has continually investigated new grants, some of which are through the EPA and other Federal agencies. The program staff will continue to explore new grants and funding sources.

6.2.1 Community Outreach

In the last five years the program staff has continued its outreach programs. The program staff attends East Helena City/Council meetings; in doing so the staff has fostered a good working relationship with the Mayor and the East Helena City Council. Copies of the minutes from the Advisory Committee Meeting are sent to the Mayor and invitations for him to attend are also extended. There is a feeling of cooperation between the Program and the East Helena City Hall.

The program tracks all new babies born in the East Helena area and deliver "New Baby Packets" to all new parents in the East Helena area. Program staff sends out birthday cards once the children are a year old. The birthday cards reminds parents to have their children screened for blood lead.

School presentations for all first graders and kindergartners are given just before they are released for the summer. The presentations concentrate on where lead can be found and how to live and play safely around lead. The program staff has had positive feedback from parents of children participating in the presentations. School officials also are very positive about the presentations.

The program continues to participate in the East Helena Christmas stroll. The program's involvement with the stroll continues to increase each year. As in 2003, when the Program hosted Santa Clause. Continued participation in this event strengthens the Program's relationship with the citizens and businesses of East Helena.

In addition to the above-mentioned programs the program introduced a new outreach event, The Kiddie Parade. In 2002 the program started sponsoring a kiddie parade, which is on the Thursday before the East Helena Rodeo. Children are encouraged to dress up in western clothing or any other costume and walk in the parade.

The parade starts at the VFW and ends at the Main Street Park. After the parade children are given information packets and are treated to a picnic at the Park. The parade has been a wonderful way for the public to get to know the program staff and to participate in a community event.

Table 6.2.1 Summary of Community Outreach

| Target Population | Event | Frequency | Number Affected |
|-----------------------------------------------------------------------|-----------------------------------------------------------------------------------------------------------|------------------------------------|--------------------------------------------------------------------------|
| Parents of New Babies | New baby packets Follow up phone contacts Reminder postcard for screening when child is 1 year old. | Continually throughout the year | 50-100 packets are distributed each year. |
| Day care providers | Phone calls and site visits | Annually | 15-30 |
| Kindergartner and first grade students, at Eastgate Elementary School | Presentation on how to live and play safely around lead. Approximately 30 minutes | Annually | Approximately 400 students per year |
| Entire Community | Christmas Stroll and Kiddie Parade | Annually | 150-200 participants per year |
| City Officials | East Helena City Council Meetings | Bi-monthly | 5-30 people per meeting |
| East Helena Residents with unremediated yards | Notification of the remediation guidelines | Annually | 190 annually This number decreases each year with yearly remediation. |
| Day care providers | Training on lead sources, effects of lead and prevention methods | Annually | Approximately 80 daycare providers attend the training. |
| General public | Posters at paint and hardware supply stores. | 9 retail stores in the Helena area | Unknown |

6.2.2 BLOOD LEAD SCREENING

In accordance with the previous peer review, the program staff encourages participation and provides incentives for children to participate in blood lead screening events in the fall of each year. In the fall of 2002 the program was not allowed into the schools to hold their annual screening events during open house. The superintendent told the program that they were too controversial and hence would not be allowed to do any education in the schools. This was a set back to the program's educational and blood lead-screening plan. The superintendent left shortly thereafter.

Program staff approached the new superintendent and inquired if they could resume their presentations in the schools. The new superintendent (Ron Whitmoyer) granted permission for the program to give their presentations and hold screenings in the schools. The participation rates for blood lead screenings went up with the program being allowed back in the schools.

In the last five years the program has continued to expand its outreach for these events. In the fall of 2003 the program tried incentives as a way to increase the number of children being screened. Each child seven years and younger received a free large pizza and a \$20.00 bill. Children older than seven received a free large pizza.

The numbers increased dramatically from 44 children in 2002 to 205 children in 2003. The program had 4 screening events in 2003, two in January and two in the fall. Of these four screening events all but one were held in the school, one of which was the fall open house. Two hundred children participated in the two fall events, of those 211 children 179 were seven years and younger. The program has decided to continue the incentives as they have increased the number of children being screened greatly.

Table 6.2.2

1995 – 2004 BLOOD LEAD DATA FOR CHILDREN 0-72 MONTHS

| YEAR | NUMBER | MEAN μG/DL | NUMBER NON- DETECT | NUMBER 1-4 μG/DL | NUMBER 5-9 μG/DL | NUMBER 10 –15 μG/DL | NUMBER 16-25 μG/DL |
|------|--------|---------------|--------------------------|------------------------|------------------------|---------------------------|--------------------------|
| 1995 | 82 | 5.6 | 0 | 37 | 38 | 7 | 0 |
| 1996 | 95 | 4.3 | 0 | 60 | 31 | 5* | 0 |
| 1997 | 89 | 5.6 | 0 | 48 | 28 | 11 | 2* |
| 1998 | 137 | 3.9 | 0 | 100 | 30 | 5 | 2 |
| 1999 | 66 | 6.6 | 1 | 25 | 37 | 5 | 0 |
| 2000 | 190 | 3.7 | 30 | 110 | 45 | 6* | 0 |
| 2001 | 135 | 2.4 | 34 | 88 | 13 | 0 | 0 |
| 2002 | 44 | 2.0 | 18 | 26 | 0 | 0 | 0 |
| 2003 | 205 | 1.7 | 84 | 115 | 6 | 0 | 0 |
| 2004 | 123 | 2.4 | 12 | 104 | 7 | 0 | 0 |

*The same child had 2 tests done (split), one as a follow up to the first.

The blood-lead levels have continued to decline over the last five years. The last elevated blood-lead level the program reported was in 2000, since that time the program continues to see decreases in blood-lead levels. The smelter closure in the spring of 2001 might be a contributing factor in the continued decline in blood lead levels. Many children who had a parent working at the smelter also had elevated blood lead levels. Since the closure these children are now below the action level of 10 μg/dL. Continued education of the public on lead and its hazards has also contributed in the declining blood-lead levels.

In tables 2.3 through 2.7 first time screenings and subsequent repeat screenings are presented through the last five years.

Table 6.2.3

2000 Screenings

| | | |
|----------------------------|------------|-----|
| <i>Child's First Test</i> | 147 | 79% |
| <i>Child's Second Test</i> | 32 | 17% |
| <i>Child's Third Test</i> | 2 | 1% |
| <i>Child's Fourth Test</i> | 3 | 2% |
| <i>Child's Fifth Test</i> | 2 | 1% |
| <i>Child's Sixth Test</i> | 1 | 1% |
| 2000 Total | 187 | |

Table 6.2.4

2001 Screenings

| | | |
|----------------------------|------------|-----|
| <i>Child's First Test</i> | 79 | 60% |
| <i>Child's Second Test</i> | 39 | 30% |
| <i>Child's Third Test</i> | 10 | 8% |
| <i>Child's Fourth Test</i> | 2 | 1% |
| <i>Child's Fifth Test</i> | 1 | 1% |
| <i>Child's Sixth Test</i> | 0 | 0% |
| 2001 Total | 131 | |

Table 6.2.5

2002 Screenings

| | | |
|----------------------------|-----------|-----|
| <i>Child's First Test</i> | 36 | 84% |
| <i>Child's Second Test</i> | 4 | 9% |
| <i>Child's Third Test</i> | 0 | 0% |
| <i>Child's Fourth Test</i> | 1 | 2% |
| <i>Child's Fifth Test</i> | 0 | 0% |
| <i>Child's Sixth Test</i> | 1 | 2% |
| <i>Child's Ninth Test</i> | 1 | 2% |
| 2002 Total | 43 | |

Table 6.6.6

2003 Screenings

| | | |
|-----------------------------|-----|-------|
| <i>Child's First Test</i> | 165 | 80% |
| <i>Child's Second Test</i> | 25 | 12% |
| <i>Child's Third Test</i> | 9 | 5% |
| <i>Child's Fourth Test</i> | 2 | 1% |
| <i>Child's Fifth Test</i> | 1 | .005% |
| <i>Child's Sixth Test</i> | 2 | 1% |
| <i>Child's Seventh Test</i> | 1 | .005% |
| 2003 Total | 205 | |

Table 6.6.7

2004 Screenings

| | | |
|-----------------------------|-----|-----|
| <i>Child's First Test</i> | 66 | 54% |
| <i>Child's Second Test</i> | 37 | 30% |
| <i>Child's Third Test</i> | 16 | 13% |
| <i>Child's Fourth Test</i> | 1 | 1% |
| <i>Child's Fifth Test</i> | 2 | 2% |
| <i>Child's Seventh Test</i> | 1 | 1% |
| 2004 Total | 123 | |

The tables above represent the number of children who are 6 years and younger at the time of each screening held in the last five years.

6.4.1 Lead Based Paint Abatement

The program continues to oversee the lead based paint abatement project. The program had seven houses from the second phase completed in 2000. Of these seven, three had exterior siding, windows and doors replaced. The remaining four houses had partial abatement done. Western States Abatement, Inc. was the contractor hired to do the work.

In 2002 four more houses were abated for lead based paint. Of those four, two had complete component replacement done and siding replaced. The other two had partial component replacement and paint removal completed. The contractor for these homes was Environmental Management Services.

The program had enough money left to complete one more house that was on the list to have abatement work done. The work on the house started in the fall of 2004 and will be completed in the spring of 2005. The contractor for this house was Safetech Inc. At this time there are no other homes slated to have lead based paint abatement work done.

6.5.1 Special Projects

Program staff started sampling interior dust in 12 houses, in 2002. Sampling took place for 14 months. The sampling was conducted in response to complaints from homeowners that lived along Valley Drive. Concerns were expressed that dust from the Dartman Property was contaminating their yards and homes. Prevailing winds come out of the west and blow dust onto the yards of residences along Valley Drive. ASARCO felt that the property was not contributing to increased lead in soils or interior dust; ASARCO asked the program to conduct the study. The study had four homes on Valley Drive, which is just east of the Dartman Property, four homes in the La Casa Grande subdivision and four homes in the East Helena Proper. The residences in East Helena served as the control group.

Sample locations were designated in each home (one location per home). The sampling sites were chosen where the dust would collect the most in a month's time. The dust sampling collection followed the Residential Sampling for Lead: Protocols for Dust and Soil Sampling Report put out by the EPA. The samples were sent to the State Environmental Laboratory to be analyzed. The program would get the results back in approximately two weeks.

The results were put into a spreadsheet and from the data, it does not appear that the Dartman Property is causing recontamination of yards or increasing lead in dust in homes.

This information was presented to representatives from Department of Environmental Quality and Environmental Protection Agency.

6.6.1 Focus Groups

The purpose of the focus group meetings was to receive input from the residents of East Helena on the effectiveness of the Lead Education and Abatement Program and what role it can play in improving the community to make it a better place to live and work.

Four general groups were chosen to represent the East Helena community, which included: city leaders & elected officials, business leaders, subdivision residents, and city of East Helena residents. The focus groups were given a list of the goals and objectives of the program and asked how well the program had done in accomplishing them. The primary goals and objectives covered three general areas including: health intervention & prevention, education, and program management. Specific projects were listed under each of those general areas for the focus groups to determine the effectiveness of the program and to offer additional input. Those objectives and goals along with the specific projects are as follows:

I. Health Intervention and Prevention Program

A. Monitor blood-lead levels

- Free blood-lead screenings are offered to all East Helena area residents - They can participate in the Lead Education and Abatement Program's annual blood-lead screening or schedule an appointment at the Helena Medical Lab in Helena to have an individual test ran free of charge anytime during the year.

B. Identify sources of lead in the environment that may affect blood-lead levels.

- Free environmental lead hazard assessments (i.e. water, soil, dust, paint, hobbies) to all East Helena area residents upon request.

The Lead Program oversees all yard remediation projects.

C. Implement and monitor abatement actions where necessary.

- Through additional funding from EPA, the Lead Program provides free exterior lead abatement procedures to East Helena area homes that have had their yards remediated.

II. Education Program

A. Provide Lead-Safe information to the public.

- Provide presentations to schools, homes, daycares, and individuals or groups on various aspects of "How to Live Safely Around Lead".
- Publish a quarterly newsletter on Lead Safe Information.
- Distribute mother/baby packets for all new babies in the East Helena area.

III. Program Management

- A. Maintain program office that is accessible to the public for information and blood-lead screenings.
 - Provide information, assistance and lead education brochures and pamphlets at a staffed office in the East Helena area.
 - Free blood-lead screenings are available to all East Helena area residents.
- B. Staff the program appropriately to deliver consistent service to the community.
 - Two ¾ time personnel are available to assist the needs of the community 5 days a week.

Questions asked of the focus group participants and the results of each of the focus group meetings are listed below:

Given these objectives and what we have just discussed, do you think we have accomplished our goals?

Is anyone new to the area? What role has it played in influencing your decision buy a house in the area. For those that have lived in the area for a long time... have we got the word out about how to live safely around lead?

How can the lead program play a role in improving the community to make it a better place to live and work? (The Health department's role is not to spearhead economic development, but should it play a part? If so, what could it do to improve the business climate?

Do you read the quarterly newsletter? What kind of information would you like to see in it? Is the newsletter the best way to communicate with you, or is there another medium that we could use such as e-mail.

City Leaders/Elected Officials

Health Intervention and Prevention Program

Monitor blood lead levels with the goal of reducing blood lead levels in East Helena area residents to the national average.

All focus group participants stated the program had fully met its objectives.

Comments:

- Participate in more community events
- Get in contact with OPI – for home-schooled children

Identify sources of lead that are affecting or have the potential to impact blood lead levels.

All participants stated the program had fully met its objectives.

Implement and monitor abatement actions where necessary with the goal of reducing blood lead levels in East Helena residents to the national average.

All participants stated the program had fully met its objectives.

Comments:

- Contact East Helena city offices about remodeling (right now structural changes need a city building permit)
- EPA money is not a consistent source

Education Program

Provide information to the general public on how to live safely around lead.

All focus group participants stated the program had fully met its objectives.

Comments:

- Give presentations to church groups
- Check business licenses and provide information to new businesses
- Economic development – contact “Gateway” to attend meetings provide information and assistance
- Citizens or legislators - write letters to the editor about various issues concerning East Helena’s economic development, clean –up levels, safe place to work and live etc.
- Send soil samples to different environmental labs for verification

Quarterly newsletter ideas:

Comments:

- Add "school" corner
- Put in important dates of East Helena happenings
- Add city and school phone numbers
- Add section for grandparents on how to "child safe" their homes
- Add, "Story" of the quarter (positive event or personal contribution or activity that a business or individual contributed to the community)

Program Management

Maintain program office, which is accessible to the public for information and blood lead screenings.

All focus group participants stated the program had fully met its objectives.

Comments:

- Very beneficial to keep the program office in East Helena.

Staff the program appropriately to deliver consistent service to the community.

All participants stated the program had fully met its objectives.

Additional Comments:

- Show people how to put up barriers when remodeling.
- Improve the community by keeping the action level at 1000 parts per million
- Improve the business climate by letting business owners know this is a safe place to live and work - possibly get a letter from Scott Brown at EPA
- Get an updated list every month of new employers (Go to City Hall and get list from them – keep businesses up to date on any changes made dealing with the lead issues)
- Get an updated list from realtors of new residents to East Helena
- Put together information about the program and distribute to realtors' offices
- Contact realtors, contractors and give a presentation on lead issues.

East Helena Business Leaders

Health Intervention and Prevention Program

Monitor blood lead levels with the goal of reducing blood lead levels in East Helena area residents to the national average.

All focus group participants stated the program had fully met its objectives.

Comments:

- Stress more of the positive results from the blood-lead screenings
- Sufficient blood-lead testing has been done - "When is enough, enough?"

Identify sources of lead that are affecting or have the potential to impact blood lead levels.

All participants stated the program had fully met its objectives.

Implement and monitor abatement actions where necessary with the goal of reducing blood lead levels in East Helena residents to the national average.

All participants stated the program had fully met its objectives.

Education Program

Provide information to the general public on how to live safely around lead.

All focus group participants stated the program had fully met its objectives.

Comments:

- Distribute brochures in city hall about the lead program
- Offer informational presentations to new businesses
- Work on stating the positive successes of our program and not on the negative aspects of living in a superfund site
- Go to East Helena improvement association meetings
- Discourage image that we are a "monitoring" program.
Encourage the idea that we are working with the East Helena community, not against them
- The business owners did not feel they had to "jump through hoops" to start or operate a business in East Helena

Program Management

Maintain program office, which is accessible to the public for information and blood lead screenings.

All participants stated the program had fully met its objectives.

Comments:

- Very beneficial to keep the program office in East Helena.

Staff the program appropriately to deliver consistent service to the community.

All participants stated the program had fully met its objectives.

East Helena Area Subdivision Residents

Health Intervention and Prevention Program

Monitor blood lead levels with the goal of reducing blood lead levels in East Helena area residents to the national average.

All focus group participants stated the program had fully met its objectives.

Comments:

- The program has done an excellent job screening children

Identify sources of lead that are affecting or have the potential to impact blood lead levels.

The majority of the participants said the program had fully met the objectives.

Comments:

- One resident would like to have an environmental assessment done on his home.
- One resident would like his home checked for lead-based paint

Implement and monitor abatement actions where necessary with the goal of Reducing blood lead levels in East Helena residents to the national average.

The majority of the focus group participants said the program fully met the objectives

Comments:

- One resident questioned why a home couldn't qualify for abatement even if the yard hasn't been remediated because the possible hazard is still there.
- One resident was unaware of this objective

Education Program

Provide information to the general public on how to live safely around lead.

All focus group participants stated the program had fully met its objectives.

Comments:

- Have had very positive experiences with the program through screenings and baby packet distribution
- Visit more homes, offices and businesses to drop off information
- Personal contact and follow up with the residents is good
- Talk with the individuals who still have yards that are contaminated and keep them informed on where issues stand
- Give presentations to realtors

- Check with SBA or other loan institutions and give them information to distribute to people starting businesses or moving into East Helena
- Attend East Helena improvement association meetings and become familiar with what they are doing and join them in promoting East Helena or organizing activities or events
- Use public service announcements as an additional media source
- Use Childcare Partnerships' (referral service) because people check on this when they are new to the area - get brochures and pamphlets to them and use them for an information source.

Quarterly newsletter idea

- Put in helpful information for people new to the area like a "welcome wagon"
- Put in important dates of East Helena happenings
- Add city and school phone numbers
- Add section for community events
- Put in a section on "Things to Do With Your Kids" or a "Fishing Report" as one-way to get everyone to look at the newsletter
- Number the newsletters or put in a hidden word and those that have the number or find the word win a prize (donated by a business)
- Add a "Story" of the quarter (positive event or personal contribution or activity that a business or individual contributed to the community)

Program Management

Maintain program office that is accessible to the public for information and blood lead screenings.

All focus group participants stated the program had fully met its objectives.

Comments:

- Very beneficial to keep the program office in East Helena.

Staff the program appropriately to deliver consistent service to the community.

All participants stated the program had fully met its objectives.

City of East Helena Residents

Health Intervention and Prevention Program

Monitor blood lead levels with the goal of reducing blood lead levels in East Helena area residents to the national average.

All focus group participants stated the program had fully met the objectives.

Comments:

- The program has done an excellent job screening children

Identify sources of lead that are affecting or have the potential to impact blood lead levels.

All participants said the program had fully met the objectives.

Comments:

- The program and personnel are very helpful, courteous, and have done an excellent job with environmental assessments.
- Yard remediation are done much more professional now than when the project first started

Implement and monitor abatement actions where necessary with the goal of reducing blood lead levels in East Helena residents to the national average.

All participants stated the program had fully met the objectives.

Education Program

Provide information to the general public on how to live safely around lead.

All focus group participants stated the program had fully met its objectives.

Comments:

- Residents have had very positive experiences with the program through blood-lead screenings and baby packet distribution
- For all people new to the area, distribute a "Welcome to East Helena" packet of lead information
- Additional follow up after yard remediation and environmental assessments would be good public relations
- Give presentations to realtors
- All residents felt safe living around this superfund site
- Join or attend Home Builder's Association meetings
- Become a member or entity of the East Helena City Council meetings
- Put information about the lead program in the mayor's newsletter
- Put information about the lead program on the East Helena website

Quarterly newsletter ideas:

Comments:

- Do a feature success story of a business/family/or individual in the East Helena area
- Add a section for community events.

Program Management:

Maintain program office that is accessible to the public for information and blood lead screenings.

All focus group participants stated the program had fully met its objectives.

Comments:

- Very beneficial to keep the program office in East Helena.

Staff the program appropriately to deliver consistent service to the community.

All participants stated the program had fully met its objectives.

ADMINISTRATIVE RECORD

APR 16 2007
MONTANA OFFICE

P.O. Box 6695
Helena, MT 59604

April 13, 2007

USEPA, Federal Building
ATTN: Scott Brown
10 West 15th Street, Suite 3200
Helena, MT 59626

Site # EH Date 1.07.06.00
Confidential No
Admin. Record Yes
Key Words/Comments Comments on proposed plan

Re: Comments to EPA's January 2007 Proposed Plan for Final Cleanup of East Helena's Residential Soils and Undeveloped Lands (Operable Unit No. 2)

Dear EPA:

We live outside of East Helena proper, near the Eastgate community water tower. Our residence consists of 17 acres, 10 of which are undeveloped and are subdividable into two 5-acre parcels.

In spring 2005, prior to purchasing our residence, we contacted the EPA, the Lewis and Clark County Health Department and the Montana Department of Environmental Quality to inquire whether the residence was part of the East Helena superfund site and whether any cleanup would be necessary at the residence. We were told that no cleanup level for lead had yet been established by EPA, but that it would likely be in the neighborhood of 1,000 ppm. We were provided copies of lead sampling results taken for our residence, all of which were near our house. We requested copies of sampling results done near our neighbors' homes, but were told those results could not be released to us. The highest sampling result for our residence was between 500 ppm and 1,000 ppm; most were below 400 ppm. We were also told us that based on the sampling results of our residence, our property was not part of the superfund site and was not targeted for cleanup by the EPA.

We recently reviewed the EPA's proposed plan for the East Helena Superfund Site (Operable Unit 2) and were quite surprised to see that, contrary to what we were told, our residence appears to be included in the East Helena superfund site boundary. We are also deeply troubled by what we read in the proposed plan. Our major concerns are set forth below.

- The proposed plan states that "landowners seeking to change the use of undeveloped land . . . will bear all associated cleanup costs." Such a requirement flies in the face of both CERCLA and EPA's own internal guidance. Under CERCLA, innocent landowners such as ourselves, bona fide prospective purchasers, and contiguous property owners are conditionally exempt from any cleanup casts associated with contamination in superfund sites. Moreover, the EPA Superfund Lead-Contaminated Residential Sites Handbook (August 2003) plainly states, "EPA . . . generally will not take CERCLA enforcement actions against an owner of residential property unless the residential homeowner's activities lead to a release or threat of release of

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hazardous substances resulting in the taking of a response action at a site." *See Handbook at pg. 62.* EPA's proposed plan essentially constitutes an enforcement action against residential landowners and attempts to circumvent both the spirit and black letter law of CERCLA, as well as the EPA's own guidance, by trying to hold residential landowners liable for the cleanup of contaminated areas. Such an attempt is not only inappropriate, but likely illegal.

- The EPA's selection of lead levels have no apparent rational basis, and as applied, are not protective of human health. The EPA has failed to provide any legitimate basis for requiring a 500 ppm lead cleanup level for undeveloped lands, all the while allowing developed residences to contain levels of lead between 500 ppm and 1000 ppm. Either 1,000 ppm is protective or 500 ppm is protective. If they both are equally protective or the difference is negligible (as is suggested on page 12 of the plan), then there is no rational basis for the undeveloped land lead cleanup level to be 500 ppm. If 1,000 ppm is not protective, then every property exceeding 500 ppm should be cleaned up by the EPA to 500 ppm.

Furthermore, under the plan, neighbor A could have 999 ppm of lead on his developed property and the EPA would require no cleanup. Neighbor B, right next door, could have 1,001 ppm lead on his developed property (or 501 ppm on his undeveloped property) and the property would be required to be cleaned up to 500 ppm. This would result in a patchwork of properties, some meeting a protective level of 500 ppm and others having lead levels almost twice as high. Indeed, under the existing plan, should we develop our undeveloped land and have to cleanup the property to 500 ppm, it would be contiguous to our house area, where the lead levels exceed 500 ppm. Such results clearly cannot be deemed protective.

We additionally note that if the lead cleanup levels were based on blood lead study data as the plan suggests, such a basis is contradicted by EPA's own guidance. *See EPA Superfund Lead-Contaminated Residential Sites Handbook (August 2003) at pg. B-4 ("OSWER recommends that blood lead studies not be used for establishing long-term remedial . . . cleanup levels at lead sites.")*

- The proposed plan fails to properly identify anticipated institutional controls and appears to attempt to place at least partial responsibility for developing those controls in the hands of local government. As EPA's own guidance makes clear, developing appropriate institutional controls is the EPA's responsibility, not local government's. *See Institutional Controls: A Site Manager's Guide to Identifying, Evaluating, and Selecting Institutional Controls at Superfund and RCRA Corrective Action Cleanups* (EPA 540-F-00-005, 09/2000).
- The proposed plan fails to include any cost estimate for future development of undeveloped residential areas similar to our property.
- Capping undeveloped property is not a feasible final remedy alternative and should not have been included as if it were one. Any cap put in place will only be disturbed when development occurs. At the most, capping is a temporary, short-term remedy.

- Recent studies demonstrate that detrimental lead effects are not limited to children under the age of 7, but in fact, can be seen in children up to the age of 18. Nothing in the proposed plan appears to recognize that fact.

- The plan suggests EPA has no knowledge of the actual extent of contamination on undeveloped property. We therefore question the accuracy of the boundary map provided in the plan. Moreover, it is premature to be proposing a final plan for a superfund site if, in fact, the EPA does not even know the extent of the contamination because, for instance, if that is indeed the case, the cost estimates used for alternative comparisons cannot possibly be accurate.

Sincerely,

Laura and Brian Vachowski
Laura and Brian Vachowski

ADMINISTRATIVE RECORD

pie
Site # EH File 1.07.06.00
Confidential: Yes ☐ No ☒
Admin. Record: Yes ☒ No ☐
Key Words/Comments: comments
on proposed plan

APR 16 2007
INTEGRATION

April 13, 2007

Scott Brown
U.S. Environmental Protection Agency
Region VIII, Montana Office
10 West 15th Street, Suite 3200
Helena, MT 59626

Subject: Comments on the Proposed Plan for Residential Soils and Undeveloped
Lands at the East Helena Superfund Site

Dear Mr. Brown:

I appreciate the opportunity to comment on the proposed plan for the East Helena Superfund Site. While I do not have much background in this type of issue, I do have one major concern about the contamination issues in my community. It seems to me that the Proposed Plan places a lot of emphasis on the East Helena Lead Abatement Program to continue to provide information to the public about the risks of lead and ways to prevent exposure to lead, particularly since the cleanup level is higher than that recommended by the state agency, DEQ. I also understand that this program is the one that conducts the blood screenings to make sure our children have not been exposed to unsafe levels of lead. The problem with this scenario is that this program is not all that well known or advertised. I feel that I can say this with certainty because I have lived in this community for nearly five years and have only seen one postcard having anything to do with the Lead Abatement Program. The troubling part is that I have a four year old son who plays outside in our yard on an almost daily basis and another baby on the way. From what I have been told, my particular neighborhood may be a lesser concern than others, as it is farther away from the source. However, as I mentioned before, I have not received any real information about risks to my children, nor have I been made aware that such information was available. I consider myself to be a well educated and concerned parent and worry that if I was not aware of the risks and/or available information sources, there must be a lot of other parents in the community who have no idea about this issue either.

It seems to me that it may be more protective to use a lower cleanup level to ensure that these children are protected. This is particularly true given that the Lead Abatement Program is not necessarily accomplishing all that it attempts to. While the program seems like a great idea, it wouldn't need to be relied on to such an extent if more cleanup work was done. I encourage EPA to use a lower cleanup level and ensure protection of the children of East Helena.

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Thank you for consideration of my comments.

A handwritten signature in cursive script, appearing to read "Ari Suban".

2675 Cody Drive
East Helena, MT

ADMINISTRATIVE RECORD

EDWARD STIPICH

219 E. Riggs
PO Box 1726
East Helena, MT 59635
406-227-6682
Stipich@yahoo.com

DEE

April 16, 2007

Scott Brown
EPA
Federal Building
10 West 15th Street
Helena, MT 59626

Site # EN File 1.07.06.00

Confidential: Yes No ✓

Admin. Record: Yes ✓ No

Key Words/Comments: Comments
on proposed plan

Footnote: Mr. Stipich
is currently a member
of the County Board of
Health, and a City
Councilman; former
mayor.

Dear Scott,

Since its inception I have been involved in the East Helena Superfund Clean-up. Back then I was mayor of East Helena and I have always had the health and well-being of our citizens at heart. I have not always agreed with the EPA's politics and methods during the clean-up, but after all these years I do agree that it is time to bring the clean-up to an end. As experts have repeatedly stated, it has been a success. Blood lead level studies show that children in the East Helena area have lower blood lead levels than the national average. ASARCO is closed now, and there are no longer any concerns about toxic emission. Yards have been replaced. Is the county willing to replace yards again, when expert doctors from the EPA have asserted this action would not improve blood lead levels in our children and at what cost?

I say, enough is enough. The City of East Helena has been in financial and economic limbo without the ability to expand, attract new business, and enlarge our tax base. It is time to bring closure to the clean-up, so we can move forward, allow economic development and ease the tax burden on our citizens.

Sincerely,

Ed Stipich
Ed Stipich
Councilman

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APR 16 2007

MONTANA OFFICE

Brian Schweitzer, Governor

P.O. Box 200901 • Helena, MT 59620-0901 • (406) 444-2544 • www.deq.mt.gov

April 12, 2007

Site # EH File 1.07.06.00
Confidential: Yes ☐ No ☒
Admin. Record: Yes ☒ No ☐
Key Words/Comments: Comments on
proposed plan

John Wardell
U. S. Environmental Protection Agency
Region VIII, Montana Office
10 West 15th Street, Suite 3200
Helena, MT 59626

SUBJECT: Department of Environmental Quality Comments on the Proposed Plan, East Helena Superfund Site, Montana.

Dear Mr. Wardell:

Thank you for the opportunity to provide State input on the issued proposed plan received January 11, 2007. DEQ supports EPA in proposing a soil lead action level of 500 ppm for the undeveloped lands proposed for development but would also support the risk-based concentration of 610 ppm throughout the operable unit. DEQ also tentatively supports EPA's proposed recreational and commercial exposure cleanup levels although DEQ needs to review the assumptions, calculations, and risk management basis used to develop these new cleanup levels. DEQ requests that EPA address the following concerns in the Record of Decision:

- Adopt risk-based cleanup levels for lead and arsenic for current and reasonably anticipated residential soils that conform to EPA regulations and guidance.
- Implement the EPA Technical Review Workgroup's recommendations in their February 17, 2006 memo.
- Eliminate the conclusion that the preferred alternative is protective of human health based on blood lead sampling. Also, alter the conclusion that remedy alternatives are equally capable of reducing risks.
- Include interior dust removal in the remedy.
- Identify and evaluate potential institutional controls, as that is the responsibility of EPA, in consultation with the state. The remedy requires institutional controls for soil disturbance, proposed development, and the soils repository. The Record of Decision should include funding mechanisms, development, implementation, and enforcement of institutional controls.

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- Remove the requirement that CERCLA liability shifts from the responsible parties to the property owners and developers.

Following are DEQ's specific comments on the proposed plan that EPA should address through development of the Record of Decision.

1. DEQ supports the following components of the Preferred Alternative:

- Continuing the existing East Helena Lead Education and Abatement Program (Lead Program) for as long as necessary to help reduce children's exposure to lead.
- Completing cleanup of streets, alleys, road aprons, irrigation ditches and railroad right-of-way that are adjacent to or within residential areas.
- Establishing institutional controls to prevent disturbance of soils, prevent exposure to interior dust, and to define land use changes.

For existing residential yards, DEQ supports continuing with all the sampling and cleanup protocols developed in the past 15 years under the removal action's administrative order on consent, with the exception of the soil lead level needed for a yard to qualify for cleanup. DEQ supports cleanup of all qualifying quadrants or sections of the yard with soil lead concentrations above the risk-based concentration (RBC) of 610 parts per million (ppm). DEQ requests that EPA modify its alternative based on qualifying yard quadrants greater than 610 ppm lead (and associated cost estimate with time frame for implementation) in the Record of Decision, and identify that alternative as a component of the selected remedy.

Earlier in 2007 DEQ requested the Agency for Toxic Substances and Disease Registry (ATSDR) to evaluate the protectiveness of the proposed soil lead action level of 1,000 ppm compared to the RBC. ATSDR recently informed DEQ that they will complete their evaluation after close of the public comment period. Therefore, DEQ reserves further comment on the proposed action level pending the ATSDR evaluation.

2. DEQ agrees that the Lead Program has been strong and effective with its outreach and education in helping to reduce exposure to lead and arsenic in the past, and acknowledges that the program should continue in the future. However, reducing children's exposure to soils where lead levels remain above the RBC relies on the parent's knowledge and intervention actions. The proposed plan discussed the possibility of "lower awareness of residents, who may revert to behaviors that increase the risks from the remaining lead and arsenic." This possibility exists even with the Lead Education and Abatement Program. Remediating residential soils to the risk-based lead cleanup levels is more protective and effective and has more long-term permanence. Thus, DEQ supports the more protective alternative of removing yard soils with soil lead levels greater than the RBC, thereby

eliminating the unacceptable soil exposure pathway. DEQ proposes the remedial action objective should be to remediate residential yard soils to risk-based lead levels that reduce children's lead exposure. This will reduce the reliance on education.

3. The proposed plan asserts that Alternatives 2R and 3R are "by all known measures" equivalent in terms of overall protection. EPA bases this assertion on the recent blood lead monitoring. However, the blood lead monitoring does not document this protectiveness. Nor is EPA's basis supported by the EPA Superfund Lead-Contaminated Residential Sites Handbook (Lead Sites Handbook August 2003) that states "blood lead studies...should not be used for establishing long-term remedial...cleanup levels at lead sites." In addition, the past blood lead monitoring can not be used as a measure of future protectiveness. The recent (past 10 years) participation in the blood lead monitoring program is not representative with participation of only 25-50% of self-selected individuals. More importantly, the blood lead monitoring results may have also been influenced by awareness and the education efforts and thus blood levels are likely lower than if the current education effort was not effective.
4. The Lead Model Re-Evaluation report shows that lead from residential soils and homes still present a risk of unacceptable lead exposure with soil lead levels above 520 ppm. The Record of Decision should include the Results statement from the report, "Based on the site-specific inputs to the IEUBK model... the value of P10 reaches a value of 5% at a soil concentration of approximately 520 ppm. This value is identified as the site-specific RBC for lead in soil." DEQ accepted the site specific parameters used to calculate this RBC but agreed with EPA's Technical Review Workgroup (TRW) in their recommendation "that there should be no conversion of the model's output to a new [Geometric Mean]." Use of the arithmetic mean produces a RBC of 610 ppm lead (which DEQ has previously accepted as appropriately protective).
5. DEQ supports the Lead Program's environmental assessment approach to assess possible sources of lead exposure routes within a home and then provide education on how to reduce exposure. However, the selected remedy should proactively reduce unacceptable exposure, including unacceptable exposure to interior dust, and require removal of dust if there is a complete or potentially complete exposure pathway.
6. The Proposed Plan did not include adequate discussion of anticipated institutional controls (ICs). The Proposed Plan identified Lewis and Clark County as responsible for determining necessary institutional controls. EPA has published a guidance document entitled "Institutional Controls: A Site Manager's Guide to Identifying, Evaluating, and Selecting Institutional Controls at Superfund and RCRA Corrective Action Cleanups" (EPA 540-F-00-005, 09/2000). This guidance clearly defines the steps that EPA, not a county or other entity, uses to identify and evaluate the appropriate ICs for a site. DEQ supports the

involvement of local and state governments as well as other affected parties in the ICs decision making process; however, the responsibility of identifying and evaluating potential institutional controls is EPA's, in consultation with the state, and should not be a burden unilaterally placed on the County. ICs should be considered and included in the selected remedy for the Record of Decision. ICs are a critical part of the remedy and the success of the implemented remedy where active response measures are impracticable. Please provide details of anticipated institutional controls, including information regarding costs, enforcement, implementation, funding, etc., in the Record of Decision.

7. The proposed plan states, "Developers or landowners...will bear all associated cleanup costs." The selected remedy should not state that developers and landowners will pay for remediation. Certainly developers and landowners could work out an agreeable arrangement with the Potentially Responsible Parties (PRPs) but specifically identifying liability of developers and landowners is not a component of the remedy. Allocating liability is not part of the remedy; the liability should remain with the PRPs. The Proposed Plan also states, "Undeveloped lands are being developed, and proposed for development, in the vicinity of East Helena." The Record of Decision should address that anticipated land use. The Lead Sites Handbook states that EPA generally will not take CERCLA enforcement actions against an owner of residential property. In addition, the Handbook notes that landowners may qualify under CERCLA for protection from CERCLA liability as a contiguous property owner, bona fide prospective purchaser, or innocent landowner.
8. The proposed plan provided "total costs" in the estimates for cleanup of the railroad right-of-way and water conveying ditches but not for the undeveloped lands. The Record of Decision should include total estimated costs for the undeveloped lands.
9. One of the cleanup alternatives for undeveloped lands in the proposed plan is In-Place Treatment (or tilling). The EPA Lead Sites Handbook explains that tilling is not an acceptable cleanup method for lead soils because it is not a permanent, protective remedy. This is because no lead removal occurs, and adequate mixing of soil is difficult, if not impossible, to achieve. The handbook further states that tilling may increase the volume of soil, which ultimately requires remediation. The Record of Decision needs to be more precise in its discussion of tilling as a remedy.

DEQ agrees that in limited site-specific situations, such as non-residential surficial contamination, tilling may be appropriate. However, tilling failed in the Uttick Subdivision in East Helena. After much effort and numerous tilling passes and subsequent sampling, most soils still contained lead above the negotiated cleanup level and had to be excavated and replaced. This was due to the fluvial deposits in the flood channels which had much higher contaminant levels. The adjacent Dartman Fields would likely also not be amenable to tilling due to

similar fluvial deposits. Also, the rocky sub-soils in the undeveloped land surrounding East Helena may make deep tilling difficult to implement.

The Record of Decision needs to define the sampling protocols and the decision criteria for suitability of tilling.

10. The Record of Decision should include a discussion on the long-term management and institutional controls for the East Fields soil repository. This may include a cap, dust control, weed control, BAMPs, inspections, deed restrictions, and/or groundwater monitoring.
11. The Record of Decision should require cleanup of the portions of the rodeo grounds with soil levels above the recreational cleanup level of 2,800 ppm lead and 1,000 ppm arsenic.
12. The Record of Decision should include a discussion of contingencies if the remedy fails to be protective. Also, it should describe the contingencies if the city or county can't / doesn't want to implement or, if it implements, but at some point can't / doesn't want to continue the institutional controls.
13. The preferred alternative in the proposed plan involves continuing with cleanup criteria established through the removal actions. The Record of Decision should include a discussion to notify the reader as to the different goals and objectives of a removal action compared to a remedial action. As set forth in the NCP, 55 Fed. Reg. 8666, 8695, "Although all removals must be protective of human health and the environment within their defined objectives, removals are distinct from remedial actions in that they may mitigate or stabilize the threat rather than comprehensively addressing all threats at a site."
14. Please provide the assumptions, risk calculations, and risk management basis used to determine the newly proposed soil cleanup levels for commercial and recreational land use. DEQ requests copies of this documentation for review and comment as soon as possible. Also, the Record of Decision should make clear that the soil cleanup levels for commercial and recreational land use apply to the entire operable unit and not just undeveloped lands.
15. The calculated cancer risk of $1.499\text{E-}04$ exceeds EPA's "acceptable" risk level of $1.0\text{E-}04$, as well as DEQ's "acceptable" risk of $1.0\text{E-}05$. The correct application using $1.0\text{E-}04$ in the calculation gives an arsenic PRG of 117 ppm. The Record of Decision should list the arsenic PRG of 117 ppm.
16. The remedy should require that residential soils with arsenic greater than the action level should qualify a yard for cleanup.
17. EPA's Technical Review Workgroup's (TRW) recommendation for running the lead model (IEUBK) is to use default values unless representative site-specific

data appropriate to the variable in question are available. It is inappropriate to use "regional data" if site-specific input parameters cannot be calculated. Thus, the Record of Decision should not reference or use regional data in the text or in the tables. EPA Region 8 chose the parameters, many of which DEQ and the EPA Technical Review Workgroup (February 17, 2006, memo) consider to be invalid or unrepresentative, and not equally plausible.

18. The NCP, at 40 CFR 300.430(f)(2)(iii), requires at a minimum that the proposed plan provide a summary of any formal comments received from the support agency. The proposed plan did not include that summary but stated, "After consideration of public and local government concerns and comments, MDEQ will present formal comments to EPA." DEQ would have appreciated its own input into the Proposed Plan.

DEQ is available to meet with EPA to discuss these issues and concerns. I look forward to its continued meaningful and substantial participation by the department in development of the ROD, and to working together for the best remedy. Please feel free to contact me with any questions or concerns. I can be reached at 406-841-5001.

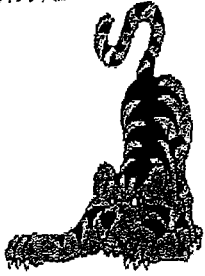
Sincerely,



Sandi Olsen
Division Administrator
Remediation Division

cc: Richard Opper
Vic Andersen
Daryl Reed
Mary Capdeville, DOJ
Jill Cohenour, State Representative House District 78
Melanie Reynolds, Lewis & Clark County

ADMINISTRATIVE RECORD



EAST HELENA PUBLIC SCHOOLS

School District No. 9

P.O. Box 1280 * East Helena, MT. 59635

Superintendent/ Administration Office (406) 227-7700

Eastgate Elementary School (406) 227-7770 * Radley Elementary School (406) 227-7710

East Valley Middle School (406) 227-7740

"Success For All"

PF ENVIRONMENTAL
PROTECTION AGENCY

MAR 19 2007

M MONTANA OFFICE

March 12, 2007

Mr. Scott Brown
USEPA
Federal Building
10 West 15th Street, Suite 3200
Helena, MT 59626

Dear Scott,

The East Helena Public Schools (EHPS) Board of Trustees would like to express their support for the finalization of the EPA Record of Decision (ROD). We believe that the ROD is an essential element to the continued well being of this community, its citizens and our children. We believe that the scientific evidence that has been examined by experts in the field has sufficient credibility to support the finalization of this decision. Realizing that this evidence has been examined extensively we now request that the plan be completed quickly for the well being of our community.

The EHPS Board of Trustees strongly supports the ideals of protection of human health and the environment. As a board we believe that the continued support of the EPA, DEQ, Lewis & Clark County officials and the Asarco Corporation will create an umbrella of oversight that guarantees the continued good health of our community from unforeseen challenges.

Sincerely,

Joe Cohenour
Chairman

Marcia Ellermeyer
Vice-Chair

Mark Diehl
Trustee

Don Hoffman
Trustee

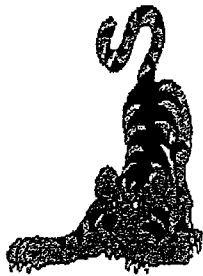
Kit Johnson
Trustee

Ann Marie Thompson
Trustee

1070600



ADMINISTRATIVE RECORD



EAST HELENA PUBLIC SCHOOLS

School District No. 9

P.O. Box 1280 * East Helena, MT. 59635

Superintendent/ Administration Office (406) 227-7700

Eastgate Elementary School (406) 227-7770 * Radley Elementary School (406) 227-7710

East Valley Middle School (406) 227-7740

"Success For All"

ENVIRONMENTAL
PROTECTION AGENCY

APR 02 2007

MONTANA OFFICE

March 28, 2007

Scott Brown
USEPA
Federal Building
10 West 15th Street
Suite 3200
Helena, MT 59626

Dear Scott,

As the Superintendent of East Helena Schools, my chief concern is for the well being of the children and residents of this community. As a teacher, principal and superintendent in this school district for the past 23 years, I feel I have a unique perspective of the current situation. This perspective allows me to see that this community has many protective needs, not just from the lead in the soil, but from the economic damage of not making a decision on proper protective levels as well.

After listening to a number of experts speak on the protective levels recommended by the EPA and hearing the arguments for and against those recommendations, I am concerned about the emotional involvement in this decision and how that has been used to influence an appropriate decision. I'm concerned that a guess or an emotional untested set point will be given credibility when there is scientific evidence and research that shows accurate depictions of protective level set points. I hope that science and common sense rule this decision and not emotional, arbitrary input. Unproven opinions that lack data and scientific evidence, that offer feelings as the basis for decision making, should be weighed carefully in deciding the future of East Helena.

Residents question the validity of such irrational thinking as simply a means to perpetuate for the Asarco business to finance state and federal agencies for their own benefit, not that of the community as a whole. The lack of East Helena community members at the EPA hearings should be an excellent indicator that the community is very satisfied with the proposed plan. Certainly the absolute chaotic meetings of the 80's when the community did NOT support the decisions should be a very good indicator of their support with these recommendations.

1070600



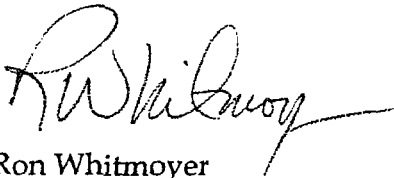
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The concerns that I have regarding this ROD are more about making an educated decision than any other point. The City of East Helena deserves to have this process move forward. The data supports the recommendation of the EPA scientists, not the feeling of the opponents of the ROD. Since individuals felt that there was not enough data I decided to look into the matter myself and requested and received the 2006 blood lead data comparisons with the lead concentrations in the soil of their residence and graphed them. That data is attached. Using simple Microsoft Excel graphing tools I was able to plot the points and compare them to the IEUBK prediction and the best fit linear regression line drawn by the EPA scientists (Bill Brattin, et al.). I ask that you review this graph and draw your own conclusions. Since not a single child in East Helena has had a blood level over 10 in the last 7 years, I would be hesitant to conclude that the IEUBK model accurately picks a protective level for our town. Further the average blood lead level of all sampled children in 2006 was 1.3 ug/dl when the national average was 1.7 ug/dl.

The IEUBK is an extremely close match to the 1993 Hydrometrics Inc. data when graphed with a third data point, the airborne lead particulates. When the air becomes a pathway for ingestion of lead you can clearly see that between 1.5 and 2.5 micrograms of lead dust in a cubic meter of air nearly matches the IEUBK model. My concern is that East Helena has tested hundreds of children and has data to prove that the IEUBK model is not an accurate depiction of the real information we have about East Helena lead pathways. Please consider these details in making a decision regarding approving the ROD. This decision has many far reaching effects on the community that include the economic viability of the town as well as the health of its residents.

Certainly the protection of the residents and the children are paramount, but let's not build a vehicle that has child seat restraints, helmets, pillows and already deployed air bags when making a Record of Decision.

Sincerely,



Ron Whitmoyer
Superintendent

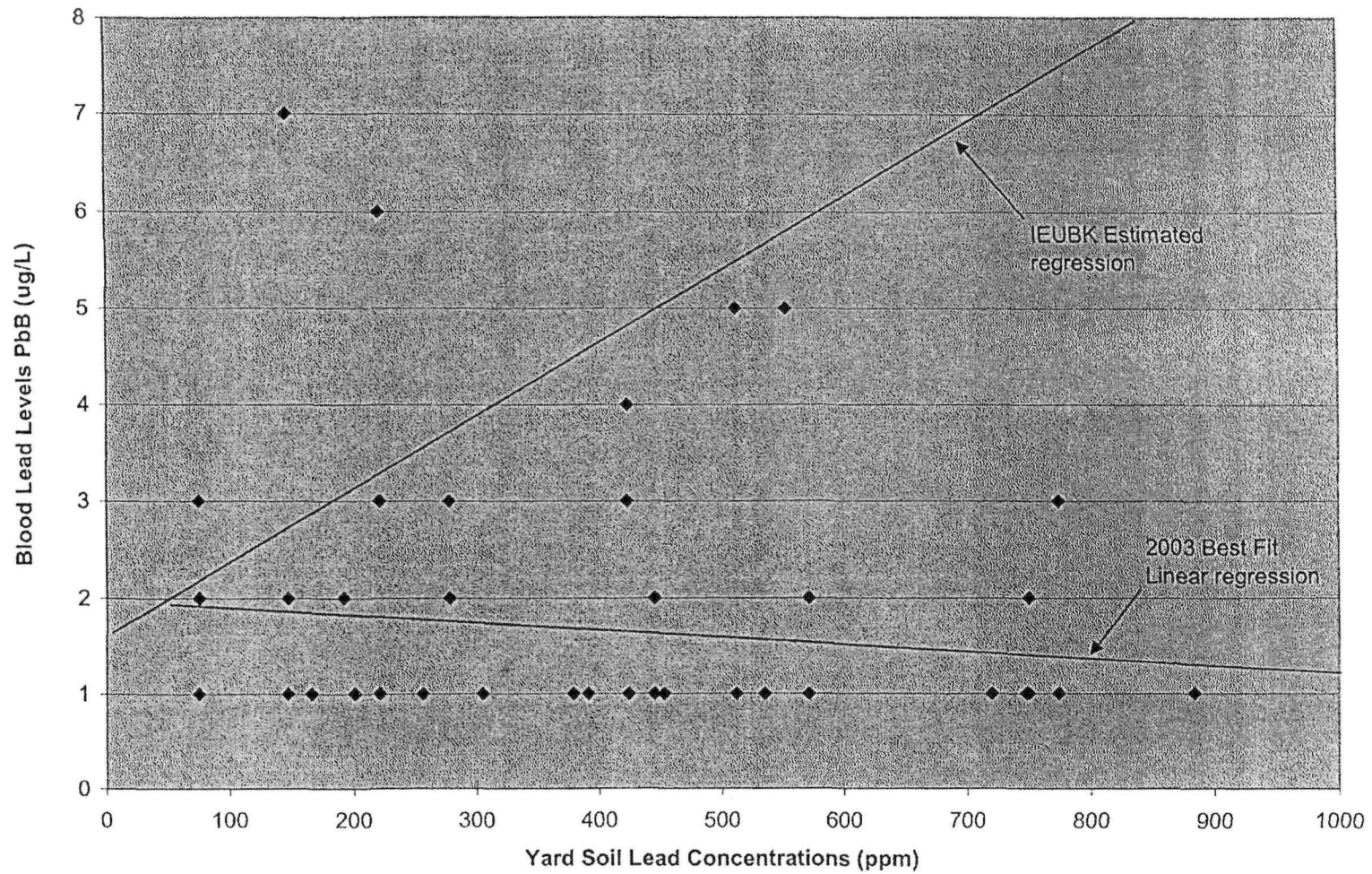
Attachments:

Blood Lead Graph - Excel

Blood Lead Graph -- Hydrometrics

Blood Lead Levels 2006

(75 Paired Points on Graph)



EAST HELENA LEAD EVALUATION

Soil/Air/Blood

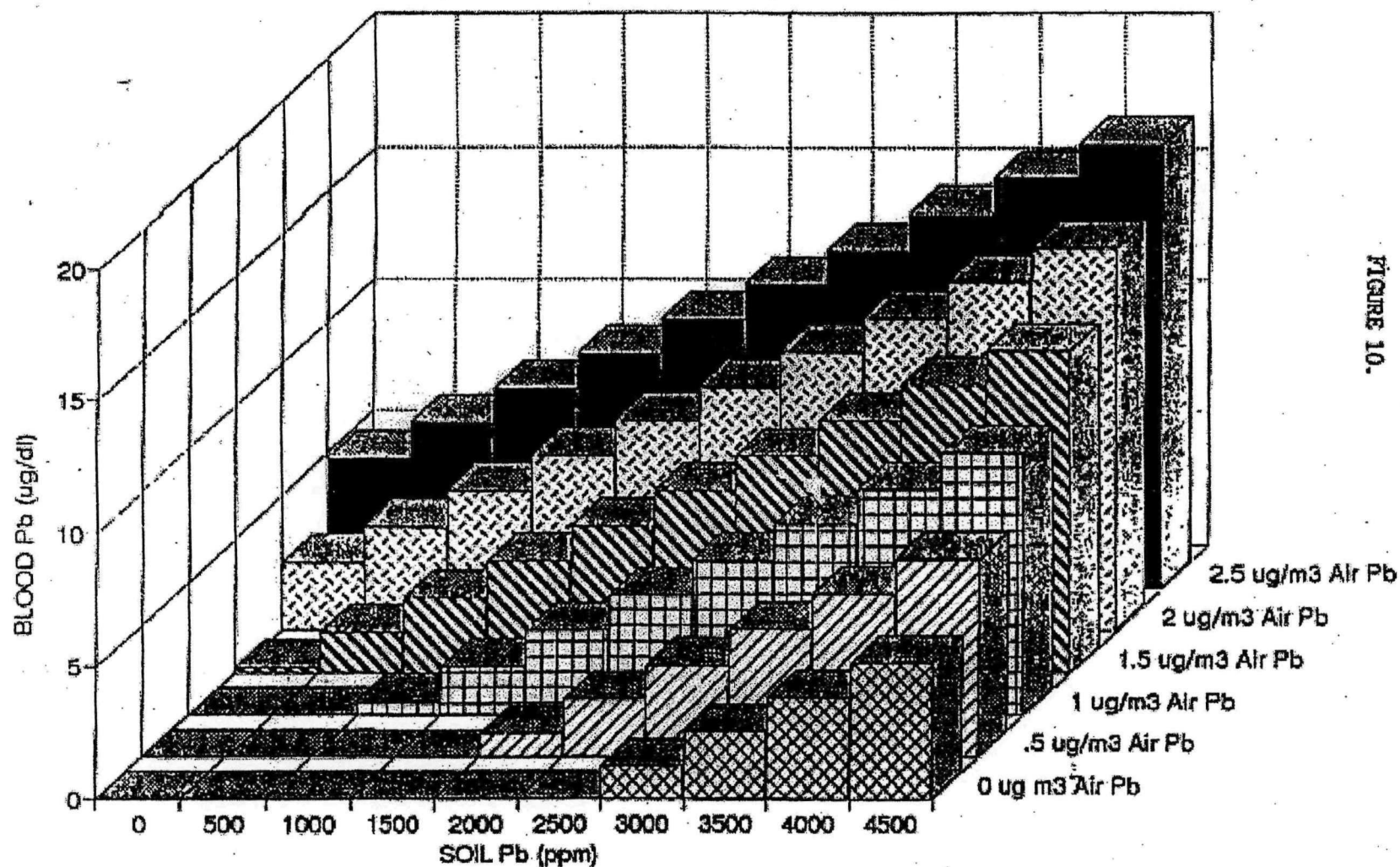


FIGURE 10.

(Source: East Helena, Montana, Soil, Blood and Air Lead Data Evaluation, Hydrometric, Inc, 1993)

ADMINISTRATIVE RECORD

DEPARTMENT OF
PUBLIC HEALTH AND HUMAN SERVICESBRIAN SCHWEITZER
GOVERNORJOAN MILES
DIRECTOR

STATE OF MONTANA

www.dphhs.mt.gov

April 16, 2007

Scott Brown
US EPA, Federal Building
10 West 15th Street
Suite 3200
Helena, MT 59626Site # EH File 1.07.06.00Confidential: Yes ☐ No ☒Admin. Review: Yes ☒ No ☐Key Words/Comments: Comments on proposed planfrom the Montana
State epidemiologist

APR 16 2007

MONTANA OFFICE

Dear Mr. Brown:

I am writing in response to "Plans for a final cleanup of East Helena's residential soils and undeveloped lands" which EPA announced in January 2007 for the East Helena Superfund Site (Operable Unit No. 2). My comments concern the parts of the plan that, in my view, are the most important for protecting the public's health with regard to exposure to lead.

While it would be ideal to eliminate lead and other heavy metals from areas both exterior (e.g., soil) and interior (e.g., dust or old paint) to living units, it is not feasible to achieve this ideal. In contrast, the plan proposed by the EPA appears to be feasible. The plan includes cleanup of a residential yard in which any quadrant has soil with lead concentration exceeding 1000 ppm. Cleanup in those yards would include all areas with lead concentrations exceeding 500 ppm.

I agree this reduction in soil lead concentration is desirable. However, because it is impossible to remove all lead-bearing soils, there will continue to be risk of ambient exposure in people's living environments from contaminated dust (not to mention lead-based paint), and continuing efforts to minimize those exposures will be important. As long as any lead concentration is detectable in interior dust, the following parts of the EPA proposed plan are essential for protecting the public health:

- A. Continue the existing East Helena Lead Education and Abatement Program, and
- B. Establish institutional controls that prevent disturbances of contaminated soil that would remain in East Helena, and prevent human exposure to interior household dust during renovation or demolition of existing housing stock in East Helena.

Achieving these two parts of the EPA proposed plan must have the highest possible priority. To the extent funds are available to implement and evaluate implementation of the proposed plan, these funds need to be preferentially targeted to these two components of the plan.

Sincerely,

Steven D. Helgerson, MD, MPH
State Medical Officer

1070600

cc: Melanie Reynolds, MPH
Health Officer, Lewis and Clark County Health Department

465940

ADMINISTRATIVE RECORD

City of East Helena

APR 12 2007

MONTANA OFFICE

April 10, 2007

Site # EH File 1.07.06.00
 Confidential: Yes ☐ No ☒
 Admin. Record: Yes ☒ No ☐
 Key Words/Comments: Comments on proposed plan

Mayor
Terrie Casey

Council Members
Chris Anderson
Wayne Krieger
Ed Stipich
Anthony Strainer

City Attorney
Mike Rieley

City Clerk
Sandra Milsten

Deputy Clerk
Susan Spotorno

Public Works
Director
Jim Rice

Wastewater
Superintendent
Bill Casey

Chief of Police
Mac Cummings

City Judge
Larry Murphy

Fire Chief
Troy Maness

P.O. Box 1170
East Helena
Montana 59635

City Offices
406-227-5321

City Fax
406-227-5456

Police Admin.
406-227-8686

Mr. Scott Brown
Mr. John Wardell
USEPA
Federal Building
10 West 15th Street
Suite 3200
Helena, MT 59626

Dear John Wardell and Scott Brown:

The City Council of East Helena has been involved in its area's Superfund Cleanup since inception. The City Council wants to be on the record as having unanimously voted in support of Alternative 2R of the Proposed Record of Decision by the EPA.

It is our belief that the blood lead studies show that the clean up program has been a success. The children in East Helena have lower blood levels than the national average. When the program started, the action plan was to clean a yard if any quadrant contained lead levels in excess of 1000ppm. This action level has remained to date. The information provided during the public meeting in East Helena on January 25, 2007, clearly demonstrates that no benefit would be gained by changing that action level.

During the presentation the IEUBK model was discussed. If one had limited, or no background data, it might seem reasonable that the numbers produced from that model could be accurate. However, since many years of data does exist, it seems more reasonable that existing information should be included in the model. The numbers from the blood level studies obviously demonstrate and substantiate the success of the existing action plan and action level. As stated by doctors from the EPA itself, there would be no expectation of improved blood lead levels by cleaning up yards with over 500ppm lead instead of 1,000ppm. If indeed any substantive probability of enhancing the children's health had been shown to result from lowering the action level, the City Council would be supportive of doing so. However, given the information at hand, this late stage of the program is not the time to change the plan.



465932



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Page 2
City of East Helena

It is the City Council's belief that yard cleanup at the existing action level in conjunction with the Lead Education Program appears to be the reason the program has been such a success. The evidence just doesn't support changing that action level when there is no expectation of blood level improvement. Nor does it support the expenditure of many more thousands of dollars.

The City Council is hopeful you will choose Alternative 2R of the Proposed Record of Decision. It is time for the superfund status of the City of East Helena to come to an end and allow us to look forward to the future.

Sincerely,



Terrie Casey, Mayor

cc: Sandra Olson, DEQ
Daryl Reed, DEQ

ADMINISTRATIVE RECORD

April 13, 2007

Scott Brown
U.S. Environmental Protection Agency
Region VIII, Montana Office
10 West 15th Street, Suite 3200
Helena, MT 59626

P&E
EH File 1.07.06.00
Yes _____ No ☒
Yes ☒ No _____
Comments: Comments
on proposed plan

Subject: Comments on the Proposed Plan for Residential Soils and Undeveloped Lands at the East Helena Superfund Site

Dear Mr. Brown:

Thank you for the opportunity to provide input on the above-referenced Proposed Plan. As a resident of the East Helena community and the mother of a toddler (with a baby on the way), I think it is important to take note of this issue. I have thoroughly reviewed the Proposed Plan and have some major issues with the chosen alternative for residential yards. I also believe there are issues with the chosen alternative for undeveloped land, but as it has less impact on my family, I will not provide many comments associated with that portion of the Proposed Plan.

Overall, I appreciate that EPA has taken the time and effort to ensure that Asarco is not able to ignore its responsibility to cleanup the mess it has left in the East Helena area. That being said, I feel that EPA is attempting to take the easy way out with its proposed cleanups of both residential yards and undeveloped lands. As a person who deals with these types of issues in my job, I feel somewhat disappointed that EPA has chosen to pursue a remedy that I believe is not as protective as it should be, and is assuring the public that the basis for the chosen remedy is sound science. It is my opinion that EPA has chosen to ignore science altogether in hopes of pushing something through that will be quick, easy, and relatively inexpensive (in the grand scheme of things), at the potential expense of human health.

Specifically, I have the following comments that I would like to see taken into consideration in EPA's Record of Decision:

1. EPA chose to input "regional data" from the Butte and Anaconda Superfund sites in its IEUBK model to come up with a site-specific risk-based cleanup level for East Helena. Data from another Superfund site is not specific to East Helena and therefore is inappropriate to use in the model. Default values should be input for all variables for which site-specific data is not available.
2. The lead model resulted in a risk-based cleanup level of 520 ppm lead in soils. It appears that EPA is completely disregarding the model in choosing a preferred remedy that has a "trigger" value of 1,000 ppm. If EPA feels it is important to cleanup soils to 500 ppm in soils that are "triggered" by a 1,000 ppm concentration, then why not use a "trigger" of something closer to 500 ppm in the first place?

1070600



3. The statement in the proposed plan that "the model derived predictions are but one aspect, of several equal or more important aspects, that were considered..." is interesting. It appears that the "more important" aspects that were considered are the blood lead studies conducted on children in the East Helena area. The EPA Superfund Lead-Contaminated Sites Handbook (August 2003) states that blood lead studies should not be used for establishing cleanup levels. However, it appears that EPA is giving these studies (which are conducted on a completely voluntary basis by people who choose to bring their children in to be tested, and are therefore not representative of the population of the area) more importance than the lead model, which is used across the nation to calculate risk-based cleanup levels.

4. The two alternatives that require action be taken are completely different and cannot be accurately compared. The action alternative that was not selected is based on a yard average, which in itself is completely inappropriate, as EPA's lead handbook referred to in the previous comment specifies that yard averages should not be used. Additionally, the costs for this alternative are going to be much higher, as the soil removal will inevitably be much larger given that the entire yard would have to be removed. It would be more useful, and more accurate, to simply change the cleanup level and leave all other aspects of the remedy the same. I expect that this would result in a much lower dollar figure for overall cleanup costs. I would like to see EPA consider what the costs would be for cleanup based on the lower cleanup level from the model (520 ppm) leaving all other aspects of the chosen remedy the same.

5. The idea that landowners who currently have undeveloped land should be responsible for paying cleanup costs should they decide to develop the property is outrageous. Not only that, but those who currently have a home on property that may later be subdivided may end up in a situation of having to cleanup their undeveloped property to a more stringent level than where they currently live. Again, this brings up the issue of the cleanup level. If EPA feels that 500 ppm is protective for future development, then why should those of us who already live in the East Helena be less important?

I understand that something needs to be done to cleanup the East Helena Superfund Site and that Asarco is in bankruptcy and money is an issue. I also understand that the East Helena City Council would like to move forward with cleanup to help expand the economy of the town. However, I think that more emphasis must be placed on the risks to the people (specifically the children) of the community and ensuring that the cleanup is done correctly the first time. That is really the most important thing.

I appreciate your consideration of my comments and look forward to the future cleanup of my community. I hope that EPA will choose to do the right thing and make sure that the people of East Helena are adequately protected.

Sincerely,

Moriah Bucy



ADMINISTRATIVE RECORD
LEWIS AND CLARK
CITY-COUNTY BOARD OF HEALTH

1930 Ninth Avenue
Helena, Montana 59601
Telephone 4-HEALTH or dial 443-2584
Fax 406-457-8990

Site # EH File # 1.07.06.00 ENVIRONMENTAL
Confidential: Yes No ☒ PROTECTION AGENCY
Admin. Record: Yes No ☒
Key Words/Comments: Comments on Proposed Plan APR 13 2007
MONTANA OFFICE

April 13, 2007

Mr. Scott Brown
U.S. EPA, Federal Building
10 West 15th Street, Suite 3200
Helena, MT 59626

Subject: Comments on the Proposed Plan for East Helena Residential Soils

The Lewis & Clark City-County Board of Health (BOH) would like to take this opportunity to present comments to the United States Environmental Protection Agency (EPA) regarding the Proposed Plan for Final Cleanup of East Helena's Residential Soils and Undeveloped Lands (Proposed Plan). The mission of the Lewis & Clark City-County Health Department (the "Health Department") is to improve and protect the health of all County residents. The Health Department administers the East Helena Lead Education and Abatement Program and has worked collaboratively with the East Helena community, EPA, and the Montana Department of Environmental Quality (MDEQ) since 1996. Once the BOH received the Proposed Plan in January 2007, we performed a detailed review of the Plan, numerous supporting documents, as well as epidemiological, toxicological, and EPA guidance reports. In addition, the BOH has been involved in several discussions and informational sessions and has attended training for long-term stewardship of hazardous waste sites. A thorough review was necessary to provide substantive comments from the BOH's long-term public health perspective.

The role of the Health Department (including its governing Board of Health) will increase significantly once the EPA and Potentially Responsible Parties have completed remedial actions to alleviate health threats posed by contaminated soils in and around East Helena. Indeed, the Health Department will be the entity primarily responsible for implementation and management of the institutional controls associated with the cleanup alternatives, including not only the continuation of educational programs, but potentially verification sampling at proposed land developments and assessment of indoor contaminant levels.

Our primary responsibility for the East Helena cleanup is protection of public health. However, because of the management responsibilities and potential liability that would be imposed on the Health Department by the use of institutional controls, we also must comment on long-term efficacy of the Proposed Plan. Our review of the Proposed Plan and numerous supporting documents, including epidemiological and toxicological studies as well as EPA guidance and reports from other similar projects at listed National Priorities List (NPL) sites, has convinced us that EPA has not substantiated the rationale for selection of the Preferred Cleanup Alternative. Our reasons, provided in the form of general comments, specific comments and questions on the following pages, are generally based on a lack of supporting documentation, inconsistency with EPA guidance, and the use of uncertain assumptions by EPA to document contaminant exposure potential and predicted health risks.

The most obvious concern we have with the Preferred Cleanup Alternative, and one that has received the most public attention, has to do with cleanup levels for residential soils. EPA has proposed an action level of 1,000 parts per million (ppm) lead in soil for cleanup, despite the Agency's own deterministic risk assessment indicating a protective cleanup level would be 520 ppm. We acknowledge two elements of this debate. First, as EPA has pointed out and used as a justification for the higher action level, lead concentrations in children's blood have steadily decreased the past 10 years, and are now equivalent to national averages. This is a notable success for the agencies involved and the community of East Helena. The second component of the debate is, however, more compelling and stems from the Health Department's responsibility for health protection, now and in the future.

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"To Improve and Protect the Health of All Lewis and Clark County Residents."

EPA's preferred remedy may only be currently protective of children's health (with respect to lead) because of the education and outreach program. This means the program will have to be implemented in perpetuity; otherwise, without adult awareness and intervention (in the form of voluntary testing of children) blood lead levels may well increase given the exposure scenarios remaining in East Helena yards and surrounding lands. Indeed, this is what EPA's own risk assessment would predict, with an action level of 1,000 ppm in residential soils.

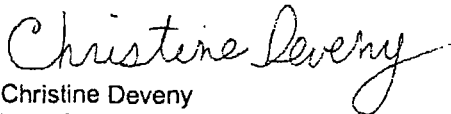
The BOH has concerns regarding the long-term protectiveness of the preferred cleanup alternative and believe it relies too heavily on institutional controls like community education and blood lead testing. Clearly, an education and testing program would always be subject to adequate funding levels, advocate support, and changing political priorities. Our preference is for a remedy that would eliminate, or at least substantially reduce, the need for perpetual oversight, monitoring, education and intervention. We believe lower cleanup levels may achieve that objective.

This is not to say that the BOH is in disagreement with all aspects of the EPA's Preferred Alternative. We believe there are many positive attributes to alternatives incorporated in the Proposed Plan, not least of which are the achievements of the blood-lead education and monitoring program. However, we are convinced that a more protective remedy can and should be implemented, and this can only be done through a collaborative process involving, at a minimum, EPA, MDEQ, the East Helena community, the Health Department, and other appropriate stakeholders.

We understand the urgency felt by many in East Helena to make a final decision on residential soils and implement the remedy. Residents of East Helena deserve closure, not just from the disruption of yards and neighborhoods, but also with respect to future economic development of properties in and around the city. We concur that all effort should be taken to reach a decision. However, the BOH believes we should not sacrifice deliberative and substantiated decision-making to expedite a process that has already consumed more than twenty years of study and response. The BOH will commit all available resources to work with East Helena, MDEQ, EPA and other stakeholders in the coming months to develop a remedy that is fully protective of residents and minimizes, to the extent possible, future liability to the County and landowners.

Please do not hesitate to contact Melanie Reynolds, County Health Officer at 457-8910 should you have questions concerning our comments, or to discuss future deliberations for this important decision.

Sincerely,



Christine Deveny
Vice Chair
Lewis & Clark City-County Board of Health



Melanie Reynolds, M.P.H.
Health Officer
Lewis and Clark City-County Health Dept.

Cc: John Wardell, EPA
Sandi Olsen, MDEQ
Daryl Reed, MDEQ
Mary Capdeville, MDEQ
Mayor Terrie Casey, East Helena
Lewis & Clark Board of County Commissioners
City-County Board of Health

Attachment: Lewis & Clark City-County Board of Health's comments

"To Improve and Protect the Health of All Lewis and Clark County Residents."

LEWIS & CLARK CITY-COUNTY BOARD OF HEALTH'S COMMENTS FINAL CLEANUP OF EAST HELENA'S RESIDENTIAL SOIL AND UNDEVELOPED LAND

1.0 INTRODUCTION AND PURPOSE

The Lewis & Clark City-County Board of Health (BOH) would like to thank the United States Environmental Protection Agency (EPA) for this opportunity to comment on the Proposed Plan for Final Cleanup of East Helena's Residential Soils and Undeveloped Lands (Proposed Plan). The mission of the Lewis & Clark City-County Health Department is to improve and protect the health of all County residents. The City-County Health Department administers the East Helena Lead Education and Abatement Program and has worked with the East Helena community, EPA, and the Montana Department of Environmental Quality (MDEQ) since 1996. Once the BOH received the Proposed Plan in January 2007, we performed a detailed review of the Plan, numerous supporting documents, as well as epidemiological, toxicological, and EPA guidance reports. In addition, the BOH has been involved in several discussions and informational sessions and has attended training for long-term stewardship of hazardous waste sites. A thorough review was necessary to provide substantive comments reflecting the BOH's responsibility to improve and protect the long-term health of residents in our communities. Our comments are presented below.

2.0 GENERAL COMMENTS

2.1 ARSENIC CLEANUP LEVEL, PRG OF 176 PPM

The BOH does not agree that the arsenic Preliminary Remediation Goal (PRG) of 176 parts per million (ppm) is health protective. The PRG was calculated using a target risk of $1.499\text{E-}04$, which exceeds EPA's acceptable risk range of $1\text{E-}06$ to $1\text{E-}04$ (i.e., one in one million to one in ten thousand) (USEPA, 1991) and MDEQ's acceptable risk range of $1\text{E-}05$ to $1\text{E-}06$ (i.e., one in one hundred thousand to one in one million). Although EPA guidance indicates that when risks are being *estimated* they should be considered accurate to one significant figure (USEPA, 1989), the BOH does believe it appropriate to intentionally select the largest target risk that may mathematically be rounded down to $1.0\text{E-}04$. In addition, EPA indicates a preference for remedies that will achieve the more protective end of the range (i.e., $1.0\text{E-}06$). Therefore, the arsenic PRG should be recalculated using a target risk within both EPA's and MDEQ's acceptable risk ranges, as well as considering appropriate background concentrations. The BOH acknowledges that background concentrations in Montana may exceed $1.0\text{E-}05$ (MDEQ, 2005) and must, therefore, be considered in the development of the site-specific PRG for arsenic in East Helena.

The recalculation of the arsenic PRG should include the contribution from the dermal exposure pathway that was previously omitted (ISSI, 1999). Considering a site-specific relative availability (RBA) for arsenic is not available, the RBA should be conservatively estimated in the 80 to 100% range (as was used in the 1989 [Hunter Services] and 1995 [Kleinfelder] risk assessments), rather than the estimate of 50% used to calculate the arsenic PRG (ISSI, 1999, 2001).

Cleanup levels selected for arsenic in soils at other mining and mineral processing sites also suggest the East Helena PRG is not protective. For example, 70 ppm of arsenic or greater in soils is the threshold selected by EPA for residential yard removal and replacement at the Vasquez Boulevard & I-70 superfund site in Denver. Arsenic cleanup levels for residential soils are all 100 ppm or less for the ASARCO/El Paso Smelter site, Coeur d'Alene basin, Jacobs

Smelter in Utah, Midvale Smelter in Utah, Sharon Steel in Utah, and ASARCO/Globe Site in Colorado. Closer to home, Montana DEQ has established a "generic" 40 ppm action level for arsenic in soil that is based on carcinogenic and non-cancer risk analysis (MDEQ 2005).

It is also worth referring to the 1991 Remedial Investigation/Feasibility Study (RI/FS) which presumably provides the basis for the Proposed Plan. This document assessed concentrations of a number of metals and metalloids in residential soils, and used a risk-based modeling approach to develop remedial goals. The target concentration identified in the RI/FS for arsenic is 45 ppm, approximately 1/4 the PRG noted in the Proposed Plan (Hydrometrics 1991; see Table 10-6-1).

It is the opinion of the BOH that the arsenic contamination remaining in soils may well be a "source of concern" to the community in that cancer probability from exposure to these soils may exceed EPA's range of acceptable risk. It should be noted that EPA's Proposed Plan seems to acknowledge this possibility, in stating: "As arsenic concentrations in soil rise above that value, however, long term exposures (lifetime) present risks that may be unacceptable." (page 32). We would also note that it is erroneous to equate average arsenic levels below 80 ppm to "near natural levels." According to EPA's supporting documentation for East Helena, the background arsenic levels used for comparison range from 15 to 18 ppm, with an average of 16.5 ppm. (Hydrometrics 1991; Table 5-1-1).

2.1.1 Soil Sampling and Analysis for Arsenic

The soil sampling and analysis approach is not described in the Proposed Plan for either residential yards or undeveloped land. A Modification of the Administrative Order on Consent for the East Helena Residential Soils Removal Action (USEPA, 1992) indicates that 5 sampling points are used within each removal unit (i.e., residential yard quadrant). Soil is removed to the depth needed to reduce the remaining lead concentration to below 440 ppm and the arsenic concentration to below 100 ppm. The BOH requests that a detailed Standard Operating Procedure (SOP) be provided describing the soil sampling and analytical approach, including the justification for determining the depth to which soils are excavated in residential yards.

The analytical method is not described in the Modification, but we understand that field portable X-Ray Fluorescence (XRF) analyzers are used to determine arsenic concentrations. Because XRF technology is a field screening approach and is not considered as accurate as laboratory analyses (i.e., EPA Method 6000/7000 Series using EPA SW-846 protocols for Quality Assurance/Quality Control requirements [QA/QC]), the BOH recommends that a Quality Assurance Project Plan (QAPP) be implemented to validate the accuracy and precision of the field screening data (at least to a limited extent).

2.1.2 Arsenic Toxicity

The development of the arsenic PRG should also allow for the uncertainty associated with the toxicity of arsenic, a known human carcinogen. For example, the California Environmental Protection Agency (Cal-EPA) considers arsenic more toxic than EPA and has adopted a cancer slope factor for arsenic that is 9 times greater than the arsenic cancer slope factor available from EPA (USEPA, 2004a).

2.2 LEAD CLEANUP LEVEL OF 1,000 PPM

Although not clearly described in the Proposed Plan, the BOH understands (through correspondence and discussions with EPA) the lead cleanup level was determined based on the blood lead data from East Helena and a quantitative uncertainty analysis using EPA's Integrated Exposure Uptake Biokinetic (IEUBK) Model.

First, the BOH does not agree that the data from the blood lead studies should be used in establishing the lead cleanup level. EPA guidance indicates, "The Office of Solid Waste and Emergency Response (OSWER) recommends that blood-lead studies not be used to determine future long-term risk where exposure conditions are expected to change over time; rather, they be considered a snapshot of ongoing exposure under a specific set of circumstances (including community awareness and education) at a specific time" (USEPA, 2006a). It is the opinion of the BOH that several factors are likely contributing to the measured blood lead levels in East Helena and do not represent the future, potential health risks to soil and dust exposures. Factors that may be affecting the blood lead studies include, but are not limited to, community awareness/education, evaluation of a non-random, convenience sample (i.e., voluntary participation), the cleanup of several residential yards in East Helena since 1991, the cessation of smelter emissions, and the discontinuation of leaded gasoline. Furthermore, although the blood-lead studies appear to be representative both spatially and based on soil lead concentrations (USEPA, 2007), the blood-lead studies are not true epidemiological studies that incorporate several additional factors, such as socioeconomics and education level of the parents.

Second, differing opinions regarding the quantitative uncertainty analysis exist within EPA. It is the BOH's understanding that the EPA Region VIII toxicologists believe a quantitative uncertainty analysis can be used in conjunction with the IEUBK to develop a range of potential cleanup values; while, EPA's Technical Review Workgroup for metals and asbestos (TRW) believe a deterministic assessment resulting in a single cleanup value is appropriate (TRW, 2006). The TRW is an EPA interoffice workgroup with the specific mission to review applications of lead risk assessment methodologies and is responsible for developing national guidance and documentation on the structure, application, and validation of the IEUBK Model. The BOH does not have the level of expertise to determine which EPA opinion is the most scientifically valid for East Helena. In the interest of protecting public health, we believe it is prudent to use the more conservative approach, in which the deterministic assessment is used to generate a single cleanup value.

Consequently, the BOH believes that a deterministic approach using predictive blood lead modeling should be used to establish a health-protective cleanup level for lead in East Helena. Blood lead modeling should be focused on the most-sensitive potential receptors (i.e., children and fetuses). The IEUBK Model is appropriate for childhood receptors; however, the BOH has specific recommendations for input values that are described in the following section. EPA's Adult Lead Model is appropriate for estimating fetal blood lead concentrations for pregnant women exposed to lead contaminated soil (USEPA, 1996). Fetal blood modeling should be included in the development of a health protective lead cleanup level in East Helena. Specifically, a soil contact-intensive scenario should be evaluated to assess the health protectiveness of the lead cleanup level for fetal receptors (e.g., a pregnant female construction worker exposure scenario) (USEPA, 2004b).

2.2.1 IEUBK Modeling

In performing the IEUBK modeling, the BOH believes it is appropriate to use the site-specific data obtained for (1) the soil/dust absorption fraction of 71% *relative* bioavailability (35.5% when expressed as an *absolute* bioavailability) (USEPA, 1999b) and (2) the fraction of soil in dust term of 0.17. The remainder of the exposure parameters should not be adjusted from the default values, as described below:

- Soil Ingestion Rates - EPA guidance indicates the default soil and dust ingestion values are based on several observation studies of soil ingestion in children and are appropriate and representative estimates of soil ingestion for U.S. children. The IEUBK Model was calibrated and validated with the default soil/dust ingestion values; therefore, EPA (2006a) indicates it is unknown how the use of alternate ingestion rates would impact the model predictions. Adjustments to the soil/dust ingestion rates may only be made after approval by EPA's Office of Emergency and Remedial Response (OERR).

Before the soil/dust ingestion rates measured in the Anaconda study could be used in the IEUBK Model, the ingestion study (Stanek and Calabrese, 2000) must be submitted to OERR for review by the Technical Review Workgroup for metals and asbestos (TRW). If the OERR approves of the adjustment to the soil/dust ingestion rates, they will be incorporated into the guidance and shared among other EPA Regions (USEPA, 1999a). Therefore, the BOH believes the default soil and dust ingestion values are most appropriate.

- Geometric Standard Deviation (GSD) - EPA guidance (USEPA, 2006a) indicates that site-specific estimates of GSD should not be substituted for the default value without detailed, scientifically defensible studies documenting site-specific differences in child behavior or lead biokinetics. Such site-specific studies are not available for East Helena. Therefore, the BOH believes the default GSD is most appropriate.

The BOH appreciates the responses from and the discussions held with EPA Region VIII toxicologists regarding this issue. We understand from these discussions that the EPA Region VIII toxicologists have a differing opinion than the TRW regarding the use of variable inputs, specifically for soil ingestion rates and GSD (TRW, 2006). In the interest of protecting public health, we have chosen the more conservative of the EPA opinions (i.e., TRW).

Using the appropriate input values (as described above), the IEUBK Model predicts a lead cleanup concentration of 520 ppm (using the geometric mean as the point estimate). In other words, a lead cleanup concentration of 520 ppm would limit the risk of childhood blood lead levels exceeding 10 micrograms per deciliter ($\mu\text{g}/\text{dl}$) to 5% of the population (i.e., the current OSWER cleanup goal) (EPA, 1994).

2.2.2 Soil Sampling and Analysis for Lead

The soil sampling and analysis approach is not adequately described in the Proposed Plan for either residential yards or undeveloped land. A Modification of the Administrative Order on Consent for the East Helena Residential Soils Removal Action (USEPA, 1992) indicates that 5 sampling points are used within each removal unit (i.e., residential yard quadrant). Soil is removed to the depth needed to reduce the remaining lead concentration to below 440 ppm and the arsenic concentration to below 100 ppm. The BOH requests that a detailed SOP be provided describing the soil sampling and analytical approach, including the justification for determining the depth to which soils are excavated in residential yards.

The analytical method is not described in the Modification, but based on communications and discussions with EPA we understand that field portable XRF analyzers are used to determine lead concentrations. In addition, XRF measurements were initially validated against laboratory analyses, but were discontinued as the level of confidence increased with the XRF data. Because XRF technology is a field screening approach and is not considered as accurate as laboratory analyses (i.e., EPA Method 6000/7000 Series using EPA SW-846 protocols for Quality Assurance/Quality Control requirements [QA/QC]), the BOH recommends that a QAPP be implemented to validate the accuracy and precision of the field screening data (at least to a limited extent).

In addition, it is the BOH's opinion that the lead cleanup level should be based on the lead concentration in the fine soil fraction. EPA guidance for sampling and analysis of soil at lead sites (USEPA, 2000) indicates that the concentration of lead from the fine fraction of soil (<250 microns) is relevant for exposure from incidental soil ingestion and should be used over bulk soil analysis. The fine soil fraction is the particle size soil fraction expected to stick to fingers and, thus, become incidentally ingested. In addition, the fine soil fraction is the most likely fraction to accumulate in indoor environments as dust. The Technical Review Workgroup for metals and asbestos (TRW) reviewed data from several Superfund sites and demonstrated that the

concentration of lead in the fine soil fraction differs from the concentration in the bulk soil with an enrichment of lead and other metal contaminants observed in the fine soil fraction.

The EPA lead models consider the fine soil fraction to be the primary source of the ingested soil and dust. Fine soil fraction lead concentrations are the recommended input for both the IEUBK and the Adult Lead Model (USEPA, 2000). A site-specific lead enrichment equation can be developed to relate lead concentrations in the bulk soil and fine fraction (USEPA, 2000).

2.2.3 Lead Toxicity

The development of the lead cleanup level should also allow for the uncertainty associated with the toxicity of lead, a probable human carcinogen. Recent data indicates that blood lead levels below 10 µg/dl may cause significant health effects. EPA (2006b) indicates "Even children with low lead exposure levels (having blood lead levels of 5 to 10 µg/dl or, possibly, somewhat lower) are at notable risk, due to the apparent non-linear dose-response relationships between blood lead and neurodevelopmental outcomes". Further, EPA (2006b) indicates "There is no level of lead exposure that has yet been identified, with confidence, as clearly *not* being associated with possible risk of deleterious health effects". Regarding fetal exposure, studies have found that women who have been exposed to lead in childhood have accumulated large stores in their bones that may mobilize from bone to blood during late pregnancy and lactation. An increased risk of spontaneous abortion, neurobehavioral deficits in offspring and, in some studies, gestational hypertension, have been reported at pregnancy blood lead levels at concentrations less than 10 µg/dl (EPA 2006b).

The BOH appreciates the information provided from EPA (2007) regarding the Centers for Disease Control explanation for the present level of concern of 10 µg/dl (used in the current OSWER cleanup goal). Indeed from this explanation, and recognition that many current environmental and public health policies at the federal level do not represent scientific consensus, it is possible that the level of concern may not be lowered at anytime in the foreseeable future. Then again, over the past few decades, the blood lead level of concern has decreased from 40 µg/dl to 10 µg/dl. The BOH believes it is reasonable to anticipate the level may decrease again in the future. Our belief is supported by substantial current scientific literature. EPA has noted as recently as October, 2006: "Some recent studies of Pb neurotoxicity in infants have observed effects at population average blood-Pb levels of only 1 or 2 µg/dl; and some cardiovascular, renal, and immune outcomes have been reported at blood-Pb levels below 5 µg/dl." (EPA 2006b) As such, the lead cleanup level should be developed taking into consideration this possibility.

2.3 CLEANUP ALTERNATIVES

The BOH does not believe a sufficient number of cleanup alternatives were developed in the Proposed Plan. In particular, the range of alternatives for residential soils was too limited. The Proposed Plan does not:

- Describe the other remedial alternatives that were considered and dismissed from consideration; or
- Provide rationale for why protective remedies (such as testing of indoor spaces and insulation removal, where warranted) are not included in the alternatives.

EPA should expand the development of alternatives to allow for a more thorough review of potential remedies for East Helena soils. Funding mechanisms should be included in and described for all of the alternatives.

Specifically, the BOH requests that alternatives be developed and evaluated with the goal of fully remediating the lead and arsenic contamination in East Helena to health protective levels that would minimize the complexity and longevity of the institutional controls. Elements of such an alternative should include, but not be limited to, the following:

- Complete the remediation of residential soils to health protective cleanup goals
- Complete the remediation of streets and road aprons to health protective cleanup goals
- Prepare a projected land use forecast through the Joint Consolidated City-County Planning Board and the East Helena City Council with public participation, so as to accurately forecast and designate future land uses (and thereby establish appropriately protective soils cleanup levels)
- Develop a cost estimate to remediate undeveloped lands based on the projected land use forecast
- Fully fund remedial approaches based on projected land use
- Provide funding for residents of homes (that were constructed prior to closure of the smelter) within the East Helena study area to replace exposed insulation (such as in attics) that may have accumulated substantial quantities of airborne contaminants
- Establish Institutional Controls to manage the remediation fund and oversee remediation and to track mandatory and voluntary remedial actions.

2.4 PREFERRED CLEANUP ALTERNATIVE

The BOH has concerns that the Proposed Plan does not appear to conform with EPA guidance or statutory requirements. In particular, the lack of transparency in development and screening of alternatives has prevented the public from understanding the range of possible alternatives considered, or the benefits and drawbacks associated with these options. Typically, a proposed plan is tiered from a remedial investigation/feasibility study (RI/FS), which provides the detailed supporting documentation for possible alternatives: costs, effectiveness, technical feasibility, and so forth. However the only RI/FS referenced in the Proposed Plan dates to 1991 (Hydrometrics, 1991). Considering the 16 years of experience EPA has gained since that RI/FS, studying and attempting to remediate metals-contaminated sites across the U.S., there surely have been technological and policy advances that should be incorporated into the alternatives. It should be noted that most of the EPA guidance concerning risk assessment, remedial actions, site studies, and decision-making has been published or revised since 1991, strongly indicating that the sole RI/FS for soils cleanup should have been revised, or at least supplemented, before publication of a Proposed Plan.

EPA has indicated that the RI/FS has been updated, and notes on page 17 of the Proposed Plan: "Many of the alternatives developed at that time, however, are no longer considered viable; due principally to the substantial amount of cleanup that has since occurred. Therefore, EPA developed new alternatives that incorporate many of the features of the original alternatives, but are relevant for current conditions." If this is the case, EPA should provide the new analysis disclosing how and why some alternatives are no longer viable. The supporting documentation for new alternatives should be made available to the public for review, and the Proposed Plan should specifically reference these documents.

One example of the problems raised in using a 15+ year old RI/FS is conformance with guidance and statute. For example, as noted in the Proposed Plan (page 26), the alternatives must be evaluated against nine criteria. One of the threshold criteria that must be met is compliance with state and federal regulations (i.e., Applicable or Relevant and Appropriate Requirements [ARARs]). The Proposed Plan indicates the EPA has evaluated the alternatives for compliance with ARARs, but there was no documentation referenced or readily available for public review that would substantiate this conclusion. The only document discussing ARARs that we found applicable to the East Helena residential soils is the 1991 RI/FS (Hydrometrics, 1991). It is reasonable to expect that some state and federal regulations will have changed since that time, and an updated analysis is critical. If this has been done (for example, with the "new" alternatives that EPA references on page 17 of the Proposed Plan) then EPA should make the analysis readily available to the public.

Similarly and in general, the EPA should supply a specific list of reference documentation pertinent to the Proposed Plan. Otherwise, it is very difficult for the public and public agencies to identify and locate documentation relevant to the subject.

According to EPA guidance, the Proposed Plan should provide "either a summary of the support agency's agreement with the plan or its dissenting comments" (EPA 1999c). This requirement is clearly supported by statute, as "EPA must respond to State comments.....on the Preferred Alternative when making the RI/FS and Proposed Plan available for public comment" (NCP §300.515(d)(4)). A responsiveness summary addressing comments from MDEQ was not included in the Proposed Plan. By not making interested parties fully aware of MDEQ's dissenting comments and publishing them in the proposed plan, EPA has failed to meet its statutory public disclosure obligations or follow its own guidance for the CERCLA decision-making process.

2.4.1 Scope of Preferred Cleanup Alternative

For the Preferred Cleanup Alternative to be protective of human health and environment, it is the BOH's opinion that the scope of the alternative must be expanded. Specifically, the Preferred Cleanup Alternative should address the following:

- **Arsenic** - The Proposed Plan does not present cleanup alternatives specific to arsenic. Rather, it indicates that because arsenic is co-located with lead, it should be mitigated through the remedy directed at lead in soils. It is the opinion of the BOH that the Preferred Cleanup Alternative should be revised to ensure the arsenic cleanup level is attained. For example, Alternative 2R should be revised as follows: Selected Soil Removal (lead cleanup level [ppm] and arsenic cleanup level [ppm]), Continuing Community Education, and Institutional Controls.
- **Attic Dust** - To prevent subchronic, acute exposures to high concentrations of metals that may be present in the attic dust of homes in East Helena, the Preferred Cleanup Alternative should include measures to prevent such exposures. Acute exposures to attic dust have been reported in other smelter areas (Montana Standard, 2004). In addition, the Record of Decision (ROD) for the Butte Priority Soils Operable Unit of the Silver Bow Creek/ Butte Area Superfund Site includes measures to mitigate attic and other household dust traps that may have accumulated substantial metal and metalloid concentrations during operational years of the smelter.
- **Other potential pathways for metal exposure** - for example contaminated soil in earthen - walled basements or crawl spaces, and dust in heating and venting ducts.
- **Rodeo Grounds** - The soils of the rodeo grounds contain very high concentrations of lead and arsenic. To prevent subchronic, acute exposures largely due to fugitive dust emissions, the Preferred Cleanup Alternative should include measures to prevent such exposures.
- **Prickly Pear Creek Upstream Contaminant Sources** - The Proposed Plan should include measures to assure that upstream contaminant sources, such as slag piles, ore storage areas, and the process ponds, are adequately contained or removed to prevent re-contamination of the Creek sediments during major storm and flooding events.

2.4.2 Long-Term Effectiveness and Permanence of the Preferred Cleanup Alternative

The City-County Health Department administers the East Helena Lead Education and Abatement Program. The purpose of this Program is to prevent and reduce elevated blood lead levels in children and we assist in this effort by coordinating blood lead screenings, providing education to

at-risk groups, and conducting voluntary environmental assessments. The BOH believes this program has been effective and are pleased with our working relationship with EPA and MDEQ. However, the BOH believes the Preferred Cleanup Alternative relies too heavily on institutional controls, including community education, which, in turn, minimizes the alternative's long-term effectiveness and permanence. Because institutional controls play a very significant role in the Preferred Cleanup Alternative, the BOH believes it will necessitate in-perpetuity blood lead monitoring of the children of East Helena. In addition, contamination will remain at undeveloped lands (until the land use is changed) requiring the City-County Health Department and other local government entities to oversee these undeveloped lands and their potential, future remedial actions.

It is the opinion of the BOH that additional alternatives should be developed and evaluated that will focus on the Reduction of Toxicity, Mobility, or Volume of Contaminants through Treatment and, thereby, maximize the Long-Term Effectiveness and Permanence of the remedy.

2.4.3 Implementability of the Preferred Cleanup Alternative

2.4.3.1 Deep Tillage for Undeveloped Lands

The BOH has concerns with the implementability of the deep tillage remedy for undeveloped lands proposed under the Preferred Cleanup Alternative. These concerns must be addressed prior to the selection of the Final Cleanup Alternative. These concerns are listed below:

- In Place Treatment - deep tillage should not be presented as a *treatment* remedy, nor is it an *innovative* technology (it has been used on sites for many years, and was included as an option for undeveloped lands in East Helena more than 16 years ago; Hydrometrics 1991). Deep tillage dilutes the contaminant concentration in the surface soil through mixing with deeper soil. Further, EPA's characterization of the "reductions" in lead concentrations are misleading, as the Proposed Plan does not also point out that the total mass of contaminant in the subsurface is not lessened by tilling.
- Mobilization - deep tillage may mobilize contaminants to concentrate in other, deeper strata at levels even greater than were found in the target shallow zone. The BOH believes the EPA should provide a more detailed assessment of the mobilization potential associated with this remedy.
- Rocky geology - rock out-croppings in the surface and near surface geology may prevent effective deep tillage of soils. In a treatability plot performed in the Asarco West Field, the maximum attainable tillage depth was 20 inches even with prior field preparation using a dozer to rip to 15 inches below ground surface (Hydrometrics, 1997). The desired tillage depth for the treatability plot was 30 inches. Considering that numerous subsurface rocks will likely be encountered in many locations, the BOH believes the EPA must provide an alternate remedy for such locations/conditions.
- Increased soil volume - deep tillage will likely increase the volume of soil as "loose" soil volumes are typically significantly greater than "compact" soil volumes. The Preferred Cleanup Alternative must consider options for the increased soil volume, particularly if the approach is not successful in achieving the lead and arsenic cleanup levels.
- Weed management - disturbance of soil through deep tillage may cause weed infestation problems. Weed management practices and funding should be considered for the Preferred Cleanup Alternative.

2.4.3.2 Institutional Controls

The BOH has several concerns with the implementability of the institutional controls that must be addressed prior to the selection of the Final Cleanup Alternative. These concerns are listed below:

- **Effectiveness in Preventing Exposures** - The institutional controls, common to all the cleanup alternatives (except "No Action"), play a significant role in the protection of human health in East Helena and the surrounding area. Considering the health protectiveness of the cleanup alternatives rely heavily on the effectiveness of the institutional controls, the BOH would like information regarding their anticipated effectiveness prior to the selection of the Final Cleanup Alternative. Such information should be gathered from other hazardous waste sites where the selected remedy relied heavily on institutional controls. In addition, an approach should be defined to monitor or measure the effectiveness of the institutional controls in East Helena over time. For example, will future blood lead data be the only measure of effectiveness, or will additional data, such as in-home environmental assessments, community interviews, or enforcements, also measure/monitor effectiveness?
- **Content** - To effectively develop and implement institutional controls, the BOH requires more information regarding their content. EPA should provide a list of recommendations and ideas that have been used successfully at other hazardous waste sites, as well as operational/management ideas. In addition, the BOH requests examples of the specific legal language used to establish "successful" institutional controls at other sites.
- **Enforceability** - The BOH has concerns with enforceability of the institutional controls. Prevention of certain potential exposures does not appear to be enforceable, such as exposures within residences (e.g., attic dust) and the long-term Best Management Practices (BMP) for agricultural areas. Prior to the selection of the Final Cleanup Alternative, EPA must provide examples of specific mechanisms to be included in the Institutional Controls for such exposures.
- **Funding** - The City-County Health Department does not have the financial resources to develop, implement, manage, and enforce the institutional controls. As such, the BOH will accept responsibility for the institutional controls only if sufficient funding will be available. The BOH health requests that the EPA provide detailed information and justification regarding the development of the cost estimates for the institutional controls, as well as the proposed funding mechanisms. Specifically, the BOH would like to ensure the following types of services are included in the cost estimates.
 - Soil sampling and analysis
 - Blood lead monitoring
 - In-home environmental assessments and contaminant abatement
 - Management of agricultural areas - the City-County Health Department does not have expertise in agricultural BMPs, nor does Lewis & Clark County have a department specializing in agricultural practices.
 - Air quality monitoring to evaluate the effectiveness of the agricultural BMPs
 - Expansion of the community education programs to include families not residing in East Helena, but whose children attend school or daycare in East Helena.
 - Free permits - EPA emphasized free permits, presumably to ensure that homeowners and landowners are not unduly burdened by the institutional controls. The permits may have a significant cost to the City-County Health

Department through permit preparation, review and administration; soil testing; and in-home environmental assessments.

- Contingencies – the cost estimates should allow for the possibility that the cost estimates will not be sufficient to adequately manage the Institutional Controls.

2.4.4 Community Acceptance

The Proposed Plan indicates (p. 25) that developers or land owners that wish to change the use of undeveloped lands must meet all the requirements and specifications for the new use and will bear all associated cleanup costs. This element of the Preferred Cleanup Alternative could have significant economic impacts to the community of East Helena. Therefore, the EPA should provide justification for transferring the cost of cleanup of undeveloped lands from the PRP to the landowner and/or developer. EPA should also provide a legal analysis regarding liability under the Comprehensive, Environmental Response, Compensation and Liability Act (CERCLA) describing how the liability is transferred from the PRP to the landowner/developer.

3.0 SPECIFIC COMMENTS

Page 1, 1st column, paragraph 3 – The proposed plan applies only to existing residential soils and offers recommendations only for undeveloped lands. Will undeveloped lands be monitored only through institutional controls after the Record of Decision (ROD) is approved?

Page 1, 2nd column, last bullet – Please provide information regarding how Burlington Northern and Montana Rail Link will be involved in the railroad right-of-way cleanup.

Page 2, 2nd column, paragraph 2 – Please provide a description of EPA's 5-year review. Who will perform the 5-year review? Will random sampling be conducted? Will an evaluation plan or protocol be developed and in place? How will it be determined whether the cleanup was sufficient or whether the institutional controls are working? What if problems are found?

Page 5, Figure 1 - Please provide a map showing the East Helena City Boundary, lands owned by ASARCO, the railroads and other major landowners.

Page 5 – Please provide a figure depicting the extent of arsenic contamination in East Helena (similar to Figure 1 that depicts the extent of lead contamination).

Page 10, 2nd column, paragraph 2 – Who is the risk management team? The proposed plan states, "All of the *alternative input values* utilized were specifically requested by the *risk management team* and are deemed to be scientifically valid." Please identify the composing members of the risk management team.

Page 16, 1st column, last paragraph – Please provide the reference for the recent risk-calculations establishing risk-based concentrations of lead and arsenic in soils for undeveloped lands for workers and recreationists.

Page 17, 2nd column, first complete paragraph, under the 1R alternative – Please describe the "other sources" of funding that may be available? Who would be responsible for securing those sources of funding?

Page 19, The BOH requests that the EPA state the local government will only accept the responsibility of Institutional Controls as long as there is funding in place.

Page 19, 2nd column, Paragraph 1 - Why are yard averages or property averages being used versus the protocol in place which uses individual quadrant analysis? Does EPA propose changing the protocol to yard averages?

Page 21, 2nd column, Paragraph 1 - this states "...it is simply not practical to eliminate all sources of and pathways for lead exposure from this large site (the rodeo grounds)." EPA provides no substantiation for this conclusion.

Page 21, 2nd Column, Paragraph 2 - Who will have the ultimate long-term responsibility for the management, operation, and monitoring of the soil repository at the East Fields? Who covers the cost of this? Will other soil repository areas be needed for the cleanup? Please provide more details regarding this topic and the area.

Page 26 and 27 - The Proposed Plan indicates that alternative 2R and 3R are "by all known measures" equally protective. Please explain further. What are "all known measures"?

Page 29, Community Acceptance, Paragraph 2. This paragraph is incorrect. While the BOH does support protection of human health, we do not link human health protection to such criterion as "at the most reasonable cost." The BOH requests this paragraph be omitted.

4.0 REFERENCES

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ADMINISTRATIVE RECORD
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April 4, 2007

ENVIRONMENTAL
PROTECTION AGENCY

APR 05 2007

MONTANA OFFICE

076735.0113

J. Scott Janoe
713.229.1553
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scott.janoe@bakerbotts.com

VIA FEDERAL EXPRESS

Mr. Scott Brown
United States Environmental Protection Agency
Federal Building
10 West 15th Street, Suite 3200
Helena, MT 59626

Re: ASARCO LLC Comments
Proposed Plan For Final Cleanup of East Helena's Residential Soils and
Undeveloped Land (OU2)

Dear Mr. Brown:

ASARCO LLC ("ASARCO") submits the following comments regarding the United States Environmental Protection Agency's ("EPA's") Proposed Plan for soil remediation in Operable Unit 2 of the East Helena Super Fund Site ("Proposed Plan"). As outlined in more detail below, ASARCO generally supports EPA's selected cleanup alternatives both for residential and undeveloped areas.

A. Residential Soils

1. Alternative 2R is an Effective Choice For Addressing Residential Soils.

ASARCO agrees with EPA's selection of Alternative 2R to address residential soils in East Helena. As noted in the EPA's announcement of the Proposed Plan (the "Announcement"), Alternative 2R "consist[s] of completing the residential soil cleanup according to protocols that are currently in place for the ongoing removal action." Announcement at 17. Implementation of these protocols has significantly lowered children's blood-lead levels in East Helena.

As noted by EPA, not a single child sampled since 2001 has had a blood-lead level that exceeded 10 ug/dl and 98% of these children have had blood-lead levels of 4 ug/dl or less. Announcement at 12. To date, the program has surpassed all goals established locally, as well as national goals for lead sites. *See id.* at 14. Indeed, average children's blood-lead levels in East Helena are below the national average. *See id.* at 16. These data are compelling proof that the protocols upon which Alternative 2R is based are proven to be an effective means of protecting human health and the environment in East Helena.



April 4, 2007

2. Alternative 2R is Superior to Alternative 3R as the Most Cost-Effective Alternative.

In choosing removal alternatives, EPA must select a remedy that is consistent with CERCLA and the nine National Contingency Plan ("NCP")¹ criteria. Of the nine criteria, two are viewed as threshold criteria - protection of human health and the environment and compliance with applicable or appropriate and relevant requirements ("ARARs"). See EPA, *The Role of Cost in the Super Fund Remedy Selection Process*, OSWER 9200.3-23, 4-5 (Sept. 1996) ("*1996 Cost Guidance*"). Alternatives that meet these threshold criteria are to be compared to one another based upon the remaining seven criteria. *Id.* As noted by EPA, Alternative 2R and 3R are functionally equivalent as to the threshold criteria. See Announcement at 26-7.² Of the remaining seven criteria, cost-effectiveness is the one that most distinguishes Alternative 2R from Alternative 3R.

EPA estimates that Alternative 3R will be almost four times as expensive to implement as Alternative 2R - \$38 million versus \$10 million³. As previously noted, Alternative 3R does not provide any comparative advantage as to protection of human health and the environment or compliance with ARARs. Accordingly, this cost discrepancy alone is enough to warrant adoption of Alternative 2R as the appreciably more cost-effective remedy.

The selection of the most cost-effective remedy among various options - all being generally equivalent in terms of protection of public health and the environment - has long been a central tenet of CERCLA. CERCLA dictates that EPA "shall select appropriate remedial actions determined to be necessary to be carried out under [CERCLA] which are in accordance with the section and, to the extent practicable, the national contingency plan, and *which provide cost-effective response.*" 42 U.S.C. § 9621(a) (emphasis added). Moreover, CERCLA emphasizes that when selecting a remedy, EPA "shall select a remedial action...*that is cost effective.*" *Id.* § 9621(b)(1) (emphasis added). In implementing this cost-effectiveness mandate, EPA has emphasized that gross discrepancies in relative costs of equally protective alternatives are a sound bases upon which to eliminate an alternative. See 40 C.F.R. § 300.430(e)(7)(ii) ("*costs that are grossly excessive compared to the overall effectiveness of alternatives may be considered as one or several factors used to eliminate alternatives.*") (emphasis added). As such,

¹ The nine NCP criteria are (1) overall protection of human health and the environment; (2) compliance with applicable or relevant and appropriate requirements; (3) long-term effectiveness and permanence; (4) reduction of toxicity, mobility, or volume through treatment; (5) short-term efficiency; (6) implementability; (7) cost; (8) state acceptance; and (9) community acceptance.

² ASARCO agrees with EPA's conclusion regarding the lack of any statistical differences between child blood-lead levels in areas with soil leads in the 500 - 1000 ppm range and these with soil leads off less than 500 ppm. Reliance on such "real world" data is an appropriate way of measuring risk and setting action and cleanup levels at residential lead sites. See EPA, *Clarification to the 1994 Revised Interim Soil Lead Guidance for CERCLA sites and RCRA Corrective Action Facilities*, OSWER 9200.4-27P, 2-3 (1998).

³ ASARCO takes no position as to whether these figures accurately reflect an appropriate estimate of the costs of implementing the identified remedies except to note that Alternative 3R would obviously cost far more to implement than would Alternative 2R.
HOU03:1100988.1

April 4, 2007

ASARCO believes that EPA's selection of Alternative 2R is on all fours with the requirements of CERCLA and the NCP.

3. Community Acceptance Strongly Favors Adopting Alternative 2R Instead of Alternative 3R.

As noted by EPA, key constituencies including the East Helena City Council and the Lewis and Clark City Council Board of Health have expressed support for Alternative 2R. *See* Announcement at 29. As a member of the East Helena community, ASARCO supports the adoption of Alternative 2R. Moreover, judging by the comments made by various citizens in public meetings concerning the adoption of this Proposed Plan, the vast majority of local citizens in East Helena support the adoption of Alternative 2R. Indeed, many of the most vociferous objections voiced at these meetings were from citizens concerned that EPA would implement Alternative 3R and needlessly inconvenience the people in East Helena with an unnecessary program of more extensive remediation.

B. Undeveloped Land

For the same reasons outlined above, ASARCO agrees with EPA's selection of Alternative 4U to address undeveloped lands in East Helena.⁴

C. Conclusion

In light of the foregoing, ASARCO respectfully urges that EPA formally adopt Alternative 2R as the preferred alternative for residential soils and Alternative 4U as the preferred alternative for undeveloped land at the East Helena Site. We appreciate the opportunity to submit these comments and would welcome a chance to discuss these alternatives with EPA at a convenient time.

Respectfully submitted,

BAKER BOTTS, LLP

By: 
J. Scott Janoe

JSJ:138

cc: Tom Aldrich
J. Chris Pfahl

⁴ ASARCO takes no position as to whether these figures accurately reflect an appropriate estimate of the costs of implementing the identified remedies.
HOU03:1100988.1



LEWIS AND CLARK CITY-COUNTY BOARD OF HEALTH

1.07.06.00 PEF

ADMINISTRATIVE RECORD

Joan Miles, J.D.
Director
MT DPHHS
PO Box 4210
Helena MT 59604

Re: Request for Comments by DPHHS on Proposed Plan

Dear Joan:

On behalf of the Lewis and Clark City-County Board of Health, I am writing to request that the Montana Department of Public Health and Human Services (DPHHS) review and submit comments on the Proposed Plan for Final Cleanup of East Helena's Residential Soils and Undeveloped Lands. The comment period ends March 16, 2007. A request to EPA by the Board of Health is pending to extend the comment period.

The issues involved in the Proposed Plan are complex and have significant, far-reaching public health implications for our county. Because responsibility for implementing institutional controls and protecting public health in East Helena may involve the Board of Health and City-County Health Department, we respectfully request review and comments by your agency.

I would be happy to discuss this request in more detail. Thank you for your assistance.

Sincerely,

Melanie Reynolds, M.P.H.
Health Officer
Lewis and Clark County

Cc: Board of County Commissioners

- ✓ Scott Brown, E.P.A.
- John Wardell, E.P.A.
- Richard Opper, D.E.Q.
- Daryl Reed, D.E.Q.
- Steve Helgersen, DPHHS
- Jane Smilie, DPHHS

1070600



Site # EN File 1070600 2R
Confidential: Yes No
Admin. Record: Yes No
Key Words/Comments: Public comment

ENVIRONMENTAL
PROTECTION AGENCY

MAR 13 2007

ADMINISTRATIVE RECORD

COMMENT FOR EPA-EAST HELENA LEAD-SOIL CLEANUP PLANS

March 12, 2007

MONTANA OFFICE

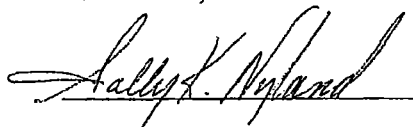
I am strongly opposed to the "preferred cleanup alternative (2R)" recommended by the EPA" and I favor Alternative R3 for the following reasons:

1. The State MDEQ has raised sufficient concerns and questions over the 1000 ppm limit as opposed to the 500 ppm in that lead blood level tests in children are based on a biased sampling of participants rather than a random sampling. The use of biased sampling is not scientific and does not lead to reliable test results.
2. The EPA by their own analysis has presented a different standard for "Clean up Goals for Undeveloped Lands" and is setting the requirement for remediation of undeveloped/residential-use land at a maximum level of 500 ppm not 1000 ppm. These two standards are in contradiction with one another.

The difference between the two standards (residential versus undeveloped/future residential) appears to be related to availability of funding for cleanup. In other words, there is just enough money available in the ASARCO reclamation fund to implement 2R and nowhere near enough to support 3R. In the case of undeveloped lands, however, since funding will likely be paid out of the developer's pockets, the level for remediation is set at 500 ppm. This reasoning ignores the actual health issues.

The plan that the EPA implements should require a uniform standard regardless of whether it involves developed or undeveloped land. Implementation of the 500 ppm level (i.e. 3R) is the safest plan and would stand the test of time. ASARCO should be required by the EPA to meet this standard (just like private developers will be required). Because of ASARCO'S current shaky financial condition they may not be around to resolve recurring issues in the future. They need to be held accountable now while there is still opportunity!

Submitted by:
Sally K. Nyland
203 North Prickley Pear Avenue
East Helena, MT 59635



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ADMINISTRATIVE RECORD

City of East Helena

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Mayor
Terrie Casey

Council Members
Chris Anderson
Wayne Krieger
Ed Stipich
Anthony Strainer

City Attorney
Mike Rieley

City Clerk
Sandra Milsten

Deputy Clerk
Susan Spotorno

Public Works
Director
Jim Rice

Wastewater
Superintendent
Bill Casey

Chief of Police
Mac Cummings

City Judge
Larry Murphy

Fire Chief
Troy Maness

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Police Admin.
406-227-8686

November 28, 2006

John Wardell, Director
Region VIII
Helena EPA Office
10 West 15th Street
Suite 3200
Helena, Montana 59626

Dear Mr. Wardell:

The City of East Helena recently received the revised "Plan for Final Cleanup of East Helena's Residential Soils and Undeveloped Lands", which is the predecessor of the Record of Decision. We have some concerns with this plan. The City of East Helena and its residents have been working with EPA for many years to correct the environmental contamination brought about by ASARCO. For nearly 15 years the action level for remediation on residential soils was at 1,000ppm lead. If there was any quadrant of a residential lot that measured 1,000ppm or greater, that yard was cleaned in all areas that had lead levels of 500ppm. This was deemed an adequate measure of cleanup by the EPA and appears to be so as evidenced by the continued success of the blood lead screenings of local children. Our children's blood lead levels are well below the national average. I attribute this success to a number of things, obviously the cleanup of soils, and education of children and their parents, along with making everyone in the community aware of the hazards. The proposed plan has one alternative, 3R, that recommends remediation which there is a measurement of 500ppm lead in the soil. Since 1991 there have been 570 residential lots cleaned up using the trigger action level of 1,000ppm. How will this new plan affect yards that have already been remediated? Will some residences be seen as "contaminated" even though their yards have been remediated under the initial regulations? It seems like a poor plan to begin remediation under one set of regulations and then to change the standards when the end of the cleanup and a Record of Decision is in sight. This has the potential to create conflict within the community and has legal ramifications as far as citizens purchasing property through a realtor and being assured, not only by the realtor, but also by the Lewis and Clark Lead Abatement office, as well as Hydrometrics that their yard has been cleaned up to the designated standards. The City of East Helena has done it's best to maintain a great place for families to live, work, recreate and attend school. We have lived through the troubles of

ENVIRONMENTAL
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DEC - 4 2006

MONTANA OFFICE

Site # EH File 1.07.06.00
Confidential: Yes ☐ No ☒
Admin. Record: Yes ☒
Key Words/Comments: City of East Helena comments on draft proposed plan

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We Support Fair Housing

Equal Opportunity Employer

John Wardell
November 28, 2006
Continued - Page 2

being named a Super Fund Cleanup Site and then with the closure of ASARCO. We have been able to maintain the standard of service for our residents, but have begun to use our cash reserves due to the lack of tax dollars from ASARCO. The City and our residents need to see this come to closure. We want to be able to attract new commercial businesses to replace our tax base. If the remediation is too onerous, we will not be able to do this. We want to see the Record of Decision with the continuation of the remediation level at 1,000ppm. The statistics that the Lead Abatement office has, will support this.

We have worked well with the Lewis and Clark County Lead Abatement office and would like to see funding in place for them to continue with the blood testing and education of citizens of the community. They have blended into the community well and they continue to aid the community with site visits to day cares, educating children and parents in nutrition and good hygiene habits. They currently are the handlers of institutional controls (which are voluntary, due to no Record of Decision) and are the most reasonable entity to continue to do so. They work in conjunction with the Lewis and Clark Department of Health, East Helena City Council, and Lewis and Clark County Health Department.

The City of East Helena has worked with the EPA in the past and expects to continue to do so in the future. We need some help. We have a city to continue to operate, the health of the residents is in better condition with the changes that have been implemented over the years. We want the Record of Decision to continue with the level of remediation that was originally put in place so we can move on. The Council and I are available to meet with you to discuss this letter and any concerns you may have. Thank you.

Sincerely,



Terrie Casey, Mayor

Cc: Scott Brown - EPA
Richard Oppen - DEQ
Jan Williams - Lead Abatement Office
Deb Tillo - Lead Abatement Office



UNITED STATES ENVIRONMENTAL PROTECTION AGENCY
REGION 8, MONTANA OFFICE
FEDERAL BUILDING, 10 W. 15th STREET, SUITE 3200
HELENA, MONTANA 59626

Ref: 8MO

September 27, 2006

x-refer to
1070600 PEF

Mr. and Mrs. Ken Soderberg
705 East Riggs
East Helena, Montana

Site # EH File 4.07.02.00
Confidential: Yes ☐ No ☒
Admin. Record: Yes ☐ No ☒
Key Words/Comments: Comfort
letter

Dear Mr. and Mrs. Soderberg:

I have carefully examined the results of soil sampling for your yard. The first sampling event took place in 1991, and 3 samples were taken from each quadrant (3-spot method). The second sampling event took place in 1994, using a 5-spot method. Samples for each quadrant are combined and analyzed to give an average lead concentration for that quadrant. In both cases, the yard was divided into four quadrants (I, II, III, IV). Here are the results of analysis for lead by x-ray fluorescence spectrometry, expressed in milligrams of lead per kilogram of soil, or more commonly expressed as parts lead per million parts of soil (ppm):

1991 - I = 347, II = 307, III = 193, IV = 183
1994 - I = 428, II = 462, III = 331, IV = 507

Your yard happens to be one of the roughly 140 yards in East Helena that EPA chose to have sampled a second time, by a more conservative 5-spot method, as opposed to a 3-spot method. Most East Helena yards have not been sampled twice. Beginning about 1993, EPA discontinued the 3-spot method in favor of the 5-spot method.

While the analytical results may appear to be variable, they are, in fact, statistically very similar. Further, both sets of data indicate that your yard is well below the "action level" that prompts EPA to require a yard soil removal and replacement. The "action level" is 1,000 ppm lead. Once a yard qualifies for a removal, then all portions of the yard with soil lead concentrations greater than 500 ppm are also removed. This affords an extra margin of safety; however, the more important determinant is whether any portion of the yard is greater than 1,000 ppm lead.

Given the current level of understanding by scientists and toxicologists, the risks associated with concentrations of lead present in your yard, for young children who may live and play in this yard environment, are low. While your yard soil lead levels are slightly impacted by historic operations at the smelter, there is much site-specific evidence for EPA to conclude that risks to young children would be low and risks to teenagers and adults are minimal.

The levels of lead found in soils of Montana not affected by fallout from a lead smelter, or other conditions that might raise soil lead levels, generally are below 80 ppm. Therefore, as is the case with every yard and every family with children in East Helena, whether the yard has been

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cleaned up or not, it is important to recognize that residual levels of lead in the East Helena environment call for prudent behaviors and reasonable precautions. These include periodic blood lead testing for all children under the age of seven years, good nutrition and hygiene, safe play practices, and maintaining a healthy grass barrier between the soil—at any lead level—and the child at play.

The East Helena Lead Education and Abatement Program, housed in East Helena, is administered by Lewis and Clark County. These capable health professionals have shown, convincingly, that East Helena families can live and play safely in yards with soil lead levels like yours. Under any circumstances, however, EPA advises East Helena families to contact these professionals and learn about sensible ways to protect against exposures to lead.

Neither you, nor any future prospective purchaser of your property, should feel unsure about these levels of lead. Once again, they are well below the "action level" that would necessitate a cleanup.

Nevertheless, as a fail-safe mechanism, EPA and Lewis and Clark County have a formal agreement that, in the event of a finding that a young child who may be particularly vulnerable to exposures, even at these low levels, a cleanup of yard soils may still be warranted in order to prevent that child's blood lead level from rising to or above a range of 6 to 8 micrograms per deciliter. This fail-safe mechanism may be invoked only after health professionals conduct a thorough evaluation of the child or children involved, and an environmental assessment of the home and yard.

Please do not hesitate to contact me if you have lingering concerns, or if in the future additional questions come to mind. I also urge you to make periodic contact with the East Helena Lead Education and Abatement Program, at 227-8451.

Sincerely,



D. Scott Brown,
Senior Scientist

cc:

Jan Williams, L&C County Lead Program

SUPPLEMENTAL COMMENTS

Lewis and Clark City-County Board of Health Questions

Letter from the City of East Helena

**EPA RESPONSES TO QUESTIONS FROM
LEWIS AND CLARK COUNTY HEALTH BOARD
Based on meeting held December 17, 2007**

- 1. Discuss the rationale for EPA's decision (on a national level) against lowering the "level of concern" for lead in children's blood (now 10 ug/dL) and discuss implications of a site-specific lowering of the "level of concern" to 5 ug/dl or 2 ug/dl.**

The rationale for EPA and CDC not lowering the blood lead level of concern below 10 ug/dL is addressed by the Centers for Disease Control and Prevention in their 2005 document entitled *Preventing Lead Poisoning in Young Children*. It reads as follows:

"In 1991 the CDC recommended lowering the level for individual intervention to 15 ug/dL and implementing community-wide primary lead poisoning prevention activities in areas where many children have blood lead level greater than 10 ug/dL. Some activities, such as taking an environmental history, educating parents about lead, and conducting follow-up blood lead monitoring were suggested for children with blood lead levels greater than 10 ug/dL. However, this level, which was originally intended to trigger communitywide prevention activities, has been misinterpreted frequently as a definitive toxicologic threshold. Evidence exists of adverse health effects in children at blood lead levels less than 10 ug/dL. The available data are based on a sample of fewer than 200 children whose blood lead levels were never above 10 ug/dL and questions remain about the size of the effect. At this time there are valid reasons not to lower the level of concern established in 1991 including the following:

- No effective clinical or public health interventions have been identified that reliably and consistently lower blood lead levels that already are less than 10 ug/dL.
- No one threshold for adverse effects has been demonstrated. Thus the process for establishing a lower level of concern would be arbitrary and no particular blood lead level cutoff can be defended on the basis of the existing data. In addition, establishing a lower level of concern may provide a false sense of safety about the well being of children whose blood lead levels are below the threshold.
- The adverse health effects associated with elevated blood lead levels are subtle. Individual variation in response to exposure and other influences on developmental status, make isolating the effect of lead or predicting the overall magnitude of potential adverse health effects exceedingly difficult.
- Efforts to identify and provide services to children with blood lead levels less than 10 ug/dL may deflect needed resources from children with higher blood lead levels who are likely to benefit most from individualized interventions."

If the health-based goal were reduced from 10 ug/dL to either 5 or 2 ug/dL, and if the IEUBK model were used to identify the target level of lead in soil, the effects would be as follows:

| Target 95th ug/dL | Target GM ug/dL | Target Soil mg/kg |
|----------------------|--------------------|----------------------|
| 10 | 4.62 | 402 |
| 5 | 2.31 | 137 |
| 2 | 0.92 | -8 |

At the East Helena site, EPA has already chosen to set a Remedial Action Objective that, based on on-going blood lead surveys, there should be no more than a 5% probability that a child will have a blood lead value greater than 5 ug/dL. This is a goal substantially more stringent than the national goal (no more than a 5% chance of exceeding 10 ug/dL), and this goal has been achieved in East Helena in every year from 2002 to the present.

2. Discuss in greater detail the extent to which education and outreach are thought to affect children's blood lead levels in East Helena.

We believe that it is unlikely that the extremely low blood lead levels observed in East Helena are due to public education and awareness. While EPA agrees that the current program of lead education is valuable in providing citizens with knowledge they may utilize to reduce risk from lead exposure, EPA does not believe that this program could be responsible for generating a bias in the data set that could account for the current observations. From 1989 – 1991, EPA conducted the Urban Soil Lead Abatement Demonstration Project in Baltimore, Boston, and Cincinnati (USEPA, 1996). The study examined the effectiveness of soil, interior dust and lead abatement in reducing children's blood lead levels. In the control groups which received no abatement, but were aware of the study and the hazards associated with lead, the investigators found significant decreases in children's blood lead levels in the first 6 months. These blood lead levels rebounded to pre-study levels by the 2nd year of the study. This study suggests that awareness of lead hazards may result in temporary changes in behavior which reduce exposure to lead hazards, but the changes are not long term. The blood lead studies in East Helena have been conducted for more than 15 years. The results are consistently low, and the trend is downwards. It is unlikely that they are influenced to any large extent by public awareness. Moreover, the blood lead data for East Helena children indicate that current exposure levels are sufficiently far from a level of concern that even if there were some small bias in the data (this is not thought to be true), the judgment that the blood lead data indicate the current soil cleanup program is effective remains valid.

Reference

US Environmental Protection Agency (1996). Urban Soil Lead Abatement Demonstration Project Volume I: EPA Integrated Report. National Center for Environmental Assessment, Research Triangle Park, NC. EPA/600/P-93/001aF.

3. Can the need for institutional controls be reduced (minimized) by adopting a more stringent soil cleanup action level? Provide an in-depth discussion and breakdown of each

component of institutional controls, including estimated short- and long-term costs per component. For clarification, Kathy Moore added: The Board seeks assurances that funding will be adequate, and that EPA and MDEQ will “be there” to provide assistance, advice and coordination.

EPA has demonstrated that, irrespective of the soil cleanup action level, the need for both short-term and long-term institutional controls remains unchanged. Institutional controls are best defined as remedy protection measures, and EPA has described in the Proposed Plan, Decision Summary and Responsiveness Summary that ICs are an essential part of the remedy.

As for the second part of the question, EPA has provided a “breakdown” of ICs by their components in the Decision Summary and Responsiveness Summary. However, cost estimates cannot be prepared by EPA alone. The annual cost for maintaining the Lead Education and Abatement Program is approximately \$140,000. The extent to which ICs administration will be carried out by the lead abatement program, or perhaps another county program, is unknown. Also unknown is whether or not the county will seek fees to carry out ICs that are routinely conducted by the county already (e.g., subdivision planning and reviews, best management practices and weed control on undeveloped lands, maintaining a GIS database to keep track of sampling results, etc.). These are but two examples of cost estimates that EPA cannot provide without the county’s input.

EPA is prepared to resume work with the county, as before, once the record of decision is issued and throughout the remedial design and remedial action construction phases of remedy implementation. With input from the county, and exchange of information, the ICs components may be refined and costs estimated. EPA anticipates that the Board of Health will resume deliberations regarding its vital role in administering ICs. The Board may adopt regulations and develop policies regarding ICs.

It would be both presumptuous and very likely unsuccessful for EPA to “specify” or “prescribe” ICs beyond the extent to which ICs have to date been identified. Thus, development, funding and administration of ICs must be a cooperative effort. EPA has numerous times demonstrated its commitment to supporting the county, and EPA will continue to work with and support the county for as long as is necessary.

4. Some East Helena children have been tested multiple times. How were multiple tests treated in the representations of data to date? Plot on an aerial photo data that represent children who were tested multiple times. Scott Brown and Kathy Moore discussed this request with Jan Williams and Debb Tillo and the following conclusions were made: EPA’s contractor has access to the county-managed data base. EPA can plot these data on an aerial photo (in a manner similar for all children tested between 1995 and 2006, irrespective of how many times each child had been tested). However, EPA’s contractor

will need assistance from Jan and Debb, as before, and from the County's GIS unit, also as before. The new plots should be considered in combination with existing plots.

When an individual child was tested more than one time, all values from the same child within the same calendar year were averaged. If a child was tested in more than one year, these values were kept separate when calculating yearly summary statistics and evaluating time trends.

Figure 1, prepared by the County, shows the locations of homes where one or more children had more than one blood lead value collected [Need to include Figure 1, once finalized]. As seen, the locations of homes where children have been evaluated more than one time are distributed across the city's many neighborhoods and outlying subdivisions in a manner that demonstrates a high degree of spatial representativeness.

In interpreting this information, it is useful to contemplate reasons why a child would have more than one blood lead result. EPA believes the most likely reason is that the first blood lead result would have been higher than what the parents felt was appropriate, and that follow-on tests were performed to determine if the first value was correct or to see if values decreased over time. However, a complicating factor in this analysis is the incentive program offered by the County, which may have encouraged some parents to have multiple tests of their children's blood lead, even when initial blood lead values were low.

Table 1 shows summary statistics that test this hypothesis. As seen, the data indicate children with high initial blood lead values tended to have more follow-up blood lead measurements (an average of 1.7 follow-ups per child) than children with lower initial blood lead values (about 0.3 follow-up visits per child). Note that this pattern may tend to bias the blood lead data set in an upwards (overestimation) direction, since children with elevated values contribute data more frequently than children with lower values.

5. Reexamine the apparent "upward trend" of higher blood lead values for East Helena children observed in 2006, as compared to previous years. Kathy Moore's follow-up memo (attached) clarifies this point:

I wrote, "there are more children over 4 (ug/dl) than there were 6 years ago." This may be what Vic was talking about. I also wrote that there is, "a 30% increase in kids over 4, the trend is increasing." I believe this addresses your question about the statistical bump in 2005.

Table 2 shows the number and fraction of children with blood lead values above 4 ug/dl as a function of year. As seen, the percentage of children above 4 ug/dl trended downward through the 1990s. This initial downward trend, EPA believes, is explained primarily by reductions of fine particulates being emitted from plant operations. By 1998-2000, Asarco began meeting the federal and state standards for lead in air. Then as seen in Table 2, the percentage of children above 4 ug/dl decreased substantially more in 2001 and has since remained low. It is not

coincidence that this decrease corresponds to the time frame in which the smelter ceased operations and all emissions from the smelter to the surrounding community were eliminated.

EPA does not interpret the data as being an “upward trend” in either 2005 or 2006. And, the fraction of children above 4 ug/dl in 2006-2007 is not higher than the fraction of children above 4 ug/dl in 2000-2001. In 2004, the fraction was slightly higher (7%) than in the two preceding years (0-3%), but that did not continue into 2005, 2006, or 2007. It is important to recognize that yearly statistics of this type are inherently variable, and it would not be appropriate to make judgments about trends based on one or two years of data. Rather, in order to determine the presence of time trends, the data must be considered in their entirety.

6. Update the multiple regression analysis graph (1993 report, using Lewis and Clark County’s 1991 blood lead data) to include all of the more recent matched pairs of soil-lead and blood-lead data and more recent air pathway inputs after 1993. Recalculate the estimated contribution arising from exposure to soils (i.e., the contribution to actual, observed blood lead levels) based on the more recent data set.

Multi-variate regression to quantify the relationship between blood lead and the concentration of lead in soil and air is confounded if blood lead values are changing because of factors other than changes in soil or air. In particular, it is well established that there has been an on-going downward trend in blood lead levels at the national level due the success of several national programs that have reduced lead exposures from food, water, automobile exhaust, and consumer products. Therefore, it is not appropriate to combine data across different time periods because to do so would tend to obscure any relationships that may exist.

Rather, it is more appropriate to analyze the data in a series of time strata. This helps minimize the confounding caused by the decreasing trends in national blood lead levels. Results of an analysis of this type are shown in Figure 2. In this graph, blood lead values, stratified by calendar period, are plotted as a function of soil lead. Stratification based on air lead is not included because air levels are now quite low and are unlikely to be a significant contributing source of elevated blood leads. Based on data from four air monitoring stations in East Helena in 2000 and 2001, the average concentration of lead in air was about 0.5 ug/m^3 . Based on the IEUBK model, the contribution of lead in air at a level of 0.5 ug/m^3 is less than 0.5 ug/dL.

If soil lead is a major source of blood lead, it is expected the data will tend to display an upward trend, with a slope similar to that predicted by the IEUBK model (about 6.5 to 8.1 ug/dL per 1000 ppm). However, as shown in the figure, the slopes of the lines in all years are quite shallow, with slopes lower than predicted by the IEUBK model. Based on all of the data, the average slope is actually negative (-1.4 ug/dL per 1000 ppm). This value is perhaps unduly influenced by the high negative slope observed in 2005, which is based on only 4 values. If this

slope is excluded, the average is very close to zero¹. EPA interprets these data to indicate that, under recent site conditions, lead in soil is only one of many sources of blood lead, and that its contribution to blood lead in children is small compared to other sources.

7. Reexamine all other relevant data pertaining to sources and pathways of lead exposure, particularly results of numerous in-home environmental assessments conducted by health professionals. Does the weight of evidence suggest that attic dust, heating system dust, unfinished basements, carpets or furniture, wall insulation, hobbies, garden vegetables, pets, parents' workplace, interior or exterior paint, or any other possible sources or pathways do contribute or do not contribute to children's blood lead levels?

A data table was provided to EPA by the County that summarized the results of 111 Exposure Assessment (EA) visits. Of these 111, EAs, 25 occurred at locations where no data were available on the level of lead in the soil. Of the 86 properties for which yard lead levels are known, about 2/3 had soil that exceeded EPA's cleanup triggers for lead, and where the soil had either been cleaned up at the time of the visit or were scheduled for cleanup.

For each EA, information was provided regarding the occurrence of non-soil sources of lead exposure such as leaded paint, elevated lead in indoor dust, lead in drinking water, a parent who worked at the smelter, etc. Of these EAs, a blood lead value (the highest observed at the property) was reported for 63 visits. Table 3 summarizes data on the frequency that non-soil sources were identified, stratified as a function of maximum blood lead for these 63 EAs. As seen, the average number of alternative sources tends to increase as the maximum observed blood lead increases. For the highest category (maximum blood lead > 10 ug/dL), alternative sources of lead exposure were identified in 90% of the visits, with an average of 1.6 alternative sources per location. These results support the conclusion that there are multiple sources of lead exposure in the community, and that there is an association between alternative sources (i.e., sources other than yard lead) and the occurrence of elevated blood lead values.

8. Reexamine soil arsenic data. Provide all pre-sample results for arsenic and show distribution contours for soil arsenic, at varying concentrations, in the same manner as distribution contours are provided for lead at varying concentrations. Kathy Moore's follow-up memo (attached) clarifies this point.

Also, the questions about how the arsenic level was chosen and is it a scientifically supported cleanup level or a cleanup level that is coincidental to lead levels is still a big question.

The method used to compute the risk-based concentration (RBC) for arsenic is based on standard EPA methods. The equation is:

¹ Note that it is not possible to plot a line that displays the average slope on the graph because the intercept term is time-dependent and so the position of the line on the graph would be arbitrary.

$$RBC = \text{target risk} / (\text{HIF} \cdot \text{RBA} \cdot \text{oSF})$$

where:

- HIF = Human Intake Factor. This describes the average amount of soil ingested per day (kg/kg-day).
RBA = Relative bioavailability of arsenic in soil compared to water
oSF = Oral slope factor for arsenic (mg/kg-day)⁻¹

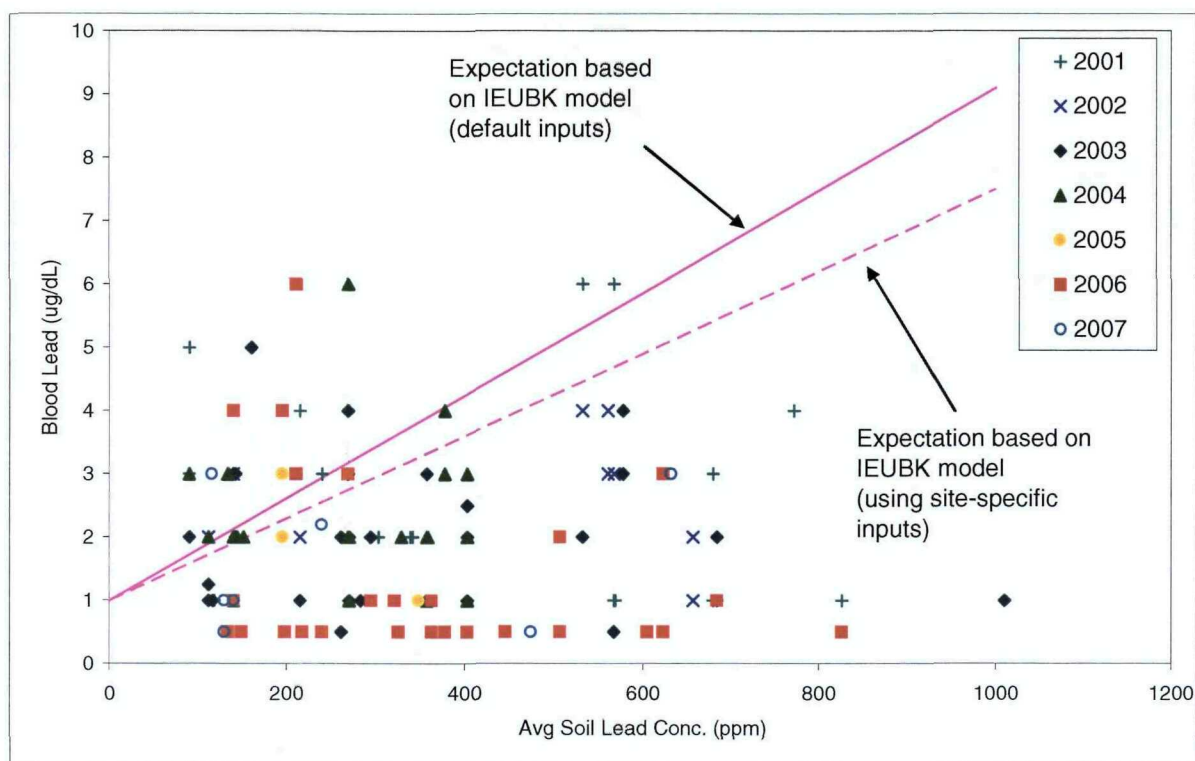
The target risk chosen was 1.499E-04, since this will yield the concentration value where risk change from 1E-04 (acceptable) to 2E-04 (unacceptable). The HIF is based on standard USEPA assumptions about residential exposure to soil (350 days year for 30 years, with intake rates of 200 mg/day as a child (age 0-6) and 100 mg/day as an adult (age 7-30)). Based on measurements of arsenic RBA an many mining sites, a value of 50% was used. This is considered to be conservative, since nearly all measured values are lower than this. Likewise, based on data from numerous other mining and smelting sites, the concentration of arsenic in indoor dust was assumed to be 50% of that in outdoor soil. This too is considered to be conservative, since the observed ratios are nearly always lower than this. Based on these inputs, the RBC for arsenic in residential soil is 176 ppm.

Figure 3 shows the relationship between arsenic and lead in soil samples from the site. As seen, although there is variability, there is a clear relation between the two. This implies that, on average, elevated levels of arsenic will be associated with elevated levels of lead. In order to investigate what the levels of arsenic would be after implementation of lead-based property cleanups, the soil database was queried to identify the total number of properties where the yard-wide average arsenic concentration exceeded 176 ppm. Six such properties were identified. After implementation of the lead-based cleanup, all six of these properties will be cleaned up and no properties will exceed an average value of 176 ppm. These results support the conclusion that a clean-up approach based on lead will adequately address any concerns that may exist over arsenic.

Additionally, a table will be provided showing yard average arsenic concentrations of the several hundreds of yards that have been sampled, but do not qualify for cleanup.

FIGURE 2

RELATION BETWEEN AVERAGE SOIL LEAD AND BLOOD LEAD VALUES
FOR CHILDREN (0 to 84 mos) AT UNREMIEDIATED PROPERTIES
IN EAST HELENA 2001 - 2007



| Year | N | Slope ug per 1000 |
|------|----|----------------------|
| 2001 | 18 | -0.70 |
| 2002 | 10 | 0.08 |
| 2003 | 37 | 0.01 |
| 2004 | 22 | 0.90 |
| 2005 | 4 | -9.82 |
| 2006 | 33 | -1.80 |
| 2007 | 7 | 1.44 |

Average slope (ug/dL per 1000 ppm)

All years -1.41

Excluding 2005 -0.01

IEUBK Predicted Slope (ug/dL per 1000 ppm)

All default inputs 8.10

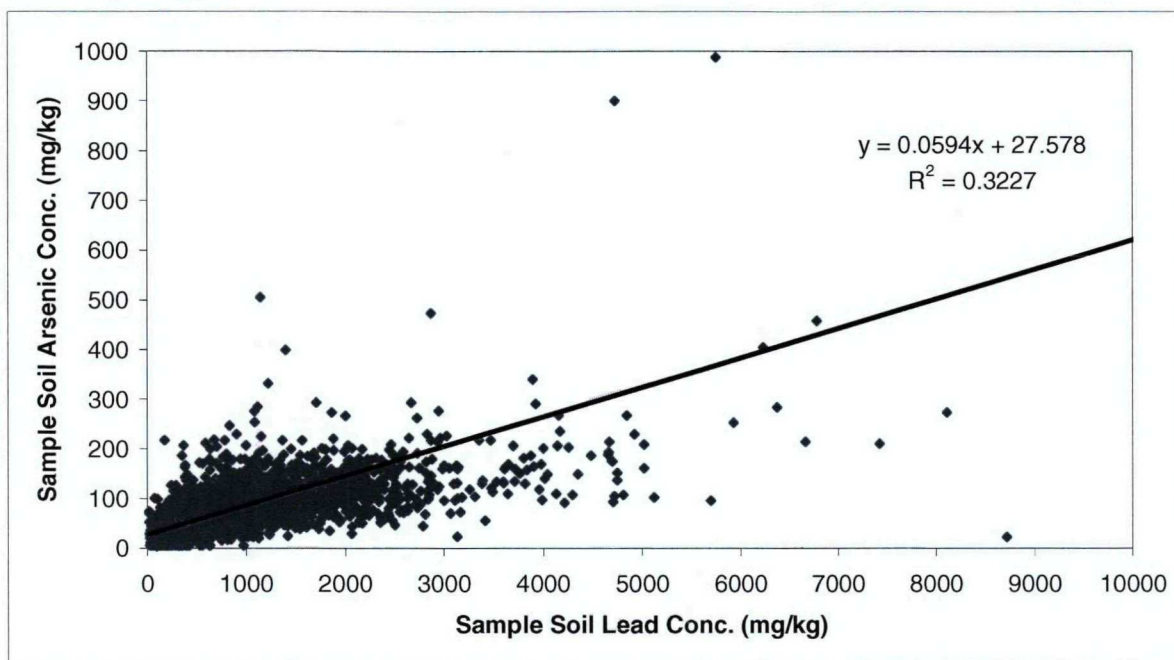
Site-specific inputs 6.50

NOTES:

If lead in soil is a significant contributor to blood lead in children, then it is expected that a plot of blood lead vs soil lead will have an upward trend. Based on the IEUBL model, this trend should be about 6 to 8 ug/dL per 1000 ppm of lead in soil. Because of the trend toward decreasing blood lead values nationally, the data must be stratified by year to have a chance to see any trends that are present. As seen, most of the observed trends are much lower than predicted by the IEUBK model. This suggests that the contribution of soil lead to blood lead is relatively small within the range of 0- 1000 ppm.

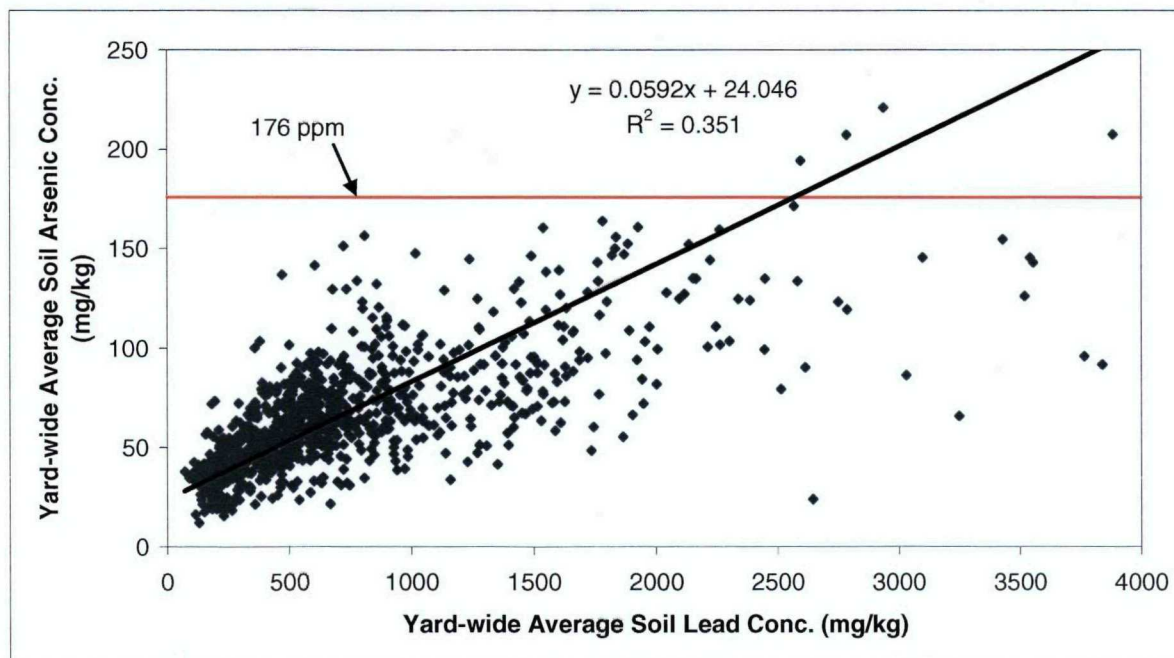
FIGURE 3
Correlation of Lead and Arsenic Concentrations in Soil

Panel A: By Sample



5 data points off-scale: 1) Pb - 27,304 mg/kg, As - 1023 mg/kg; 2) Pb - 9198 mg/kg, As - 3179 mg/kg
3) Pb - 8978 mg/kg, As - 2957 mg/kg; 4) Pb - 8224 mg/kg, As - 2655 mg/kg; 5) Pb - 7574 mg/kg, As - 2073 mg/kg

Panel B: By Yard-wide Average



2 data points off-scale: 1) Pb - 6655 mg/kg, As - 1837 mg/kg; 2) Pb - 7293 mg/kg, As - 307 mg/kg

TABLE 1.
RELATION BETWEEN INITIAL BLOOD LEAD RESULT
AND NUMBER OF REPEAT MEASUREMENTS

| Initial PbB Result (ug/dL) | N Children | N Follow-up PbB Measurements | | | | | | | Avg. Follow- up Visits |
|----------------------------------|---------------|------------------------------|----|----|---|---|---|---|---------------------------|
| | | 0 | 1 | 2 | 3 | 4 | 5 | 6 | |
| 0-3 | 550 | 436 | 79 | 24 | 6 | 3 | 2 | | 0.30 |
| 3-6 | 206 | 154 | 45 | 4 | 1 | 1 | | 1 | 0.32 |
| 6-10 | 84 | 47 | 20 | 14 | 2 | 1 | | | 0.69 |
| >10 | 24 | 7 | 8 | 2 | 4 | | 2 | 1 | 1.67 |

TABLE 2
FRACTION OF CHILDREN ABOVE 4 UG/DL AS A FUNCTION OF YEAR

| Year | Number of Children | PbB \leq 4 ug/dL | PbB $>$ 4 ug/dL |
|------|--------------------|--------------------|-----------------|
| 1991 | 71 | 49% | 51% |
| 1992 | 15 | 13% | 87% |
| 1993 | 10 | 20% | 80% |
| 1994 | 24 | 54% | 46% |
| 1995 | 75 | 49% | 51% |
| 1996 | 84 | 67% | 33% |
| 1997 | 71 | 63% | 37% |
| 1998 | 116 | 75% | 25% |
| 1999 | 51 | 35% | 65% |
| 2000 | 143 | 73% | 27% |
| 2001 | 93 | 86% | 14% |
| 2002 | 36 | 100% | 0% |
| 2003 | 159 | 97% | 3% |
| 2004 | 107 | 93% | 7% |
| 2005 | 9 | 100% | 0% |
| 2006 | 109 | 98% | 2% |
| 2007 | 7 | 100% | 0% |

TABLE 3
SUMMARY OF ENVIRONMENTAL ASSESSMENTS FOR
ALTERNATIVE SOURCES OF LEAD EXPOSURE

| PbB (ug/dL) | N | Number of Alternate Sources | | | | | |
|----------------|----|-----------------------------|--------|--------|-------|---------------------------|--|
| | | 0 | 1 | 2 | 3 | Count weighted average | |
| 0 - 6 | 35 | 19 54% | 13 37% | 3 9% | 0 0% | 0.54 | |
| >6 - 10 | 18 | 8 44% | 5 28% | 2 11% | 3 17% | 1.00 | |
| >10 | 10 | 1 10% | 3 30% | 5 50% | 1 10% | 1.60 | |
| Total | 63 | 28 44% | 21 33% | 10 16% | 4 6% | 0.84 | |

City of East Helena

ENVIRONMENTAL
PROTECTION AGENCY

APR 04 2008

MONTANA OFFICE

Mayor
Terrie Casey

Council Members
Anthony Strainer
Chris Anderson
Wayne Krieger
Ed Stipich

City Attorney
Mike Rieley

City Clerk
Sandra Milsten

Deputy Clerk
Susan Spotorno

Public Works
Director
Bill Casey

Chief of Police
Dale Aschim

City Judge
Thomas Pouliot

Fire Chief
Troy Maness

P.O. Box 1170
East Helena
Montana 59635

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406-227-5321

City Fax
406-227-5456

Police Admin.
406-227-8686

April 1, 2008

John F. Wardell
Director
Montana Office of the US EPA
10 W. 15th St.
Helena, MT 59626

Dear John Wardell,

I am writing to request the EPA come to a resolution regarding the Record of Decision for the East Helena ASARCO site. The residents of the city have been waiting since last September when we were told a final decision would be made. We were then told it would be moved to December, and then March. Most recently, we have been told, it has once again been put on hold. It would seem that with all the years of scientific studies and information that has been gathered, we should be able to move forward to a Record of Decision. As the evidence from the blood lead levels demonstrate, we are well below the national average. It seems obvious that the remediation that has been completed, along with the education program, we have achieved what we were striving for, to ensure the health of the children of our community. The concerns of MTDEQ and Lewis and Clark City County Health Board are not reasonable. The action levels to which the yards and surrounding areas have been remediated are an adequate level. There is nothing to demonstrate that making these levels more stringent will achieve a greater level of success regarding the health of the children. Since our blood lead levels are lower than the national average and much lower than when East Helena was designated a Super Fund site, what is to be gained by changing the standards at this time?

The land that is known as K&R subdivision, where East Valley Middle School and several blocks of housing is now located had varying levels of lead, cadmium and arsenic. The ground was deep till plowed, mixing the soils with a good end result. This is a relatively inexpensive manner of treatment that is very effective. By utilizing this type of treatment, it made development of the area affordable, which in turn, led to affordable housing. This same type of treatment could be used on the land to the west of the city, known as Lamping field, as well as other undeveloped land surrounding the city. This property could give the city a "hand up" if reasonable methods of remediation can be used. If developers could purchase this property, the city is willing to annex the area, providing water, sewer and other city services. The location of this is ideal for development. The area closest to the highway could be used for commercial purposes, which could help to offset the loss of tax base to the city, as well as School District #9. The area to the north could be used for residential housing.

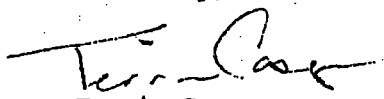
| | | | |
|------------------|--------------|------------|--------------|
| Date | 4/14/08 | # of pages | 2 |
| From | Scott Brown | Co. | |
| Phone # | 406-457-5056 | Fax # | 503-274-6160 |
| Post-it Fax Note | 7671 | | |
| To/From | Scott Brown | | |
| Co/Dept | | | |
| Phone # | | | |
| Fax # | | | |



John Wardell
Pg. 2

We aren't asking to have the rules bent or changed to accommodate the city. We are asking that the same standards that were initially placed continue to be utilized to the end of the project. Both MDEQ and Lewis/Clark City County Board of Health were involved from the beginning. There is no logic in changing the standard at this time and nothing to be gained. We are in a holding pattern until there is a Record of Decision. We would like to move forward, looking to the future. This could involve Brownfield's grants, which we don't qualify to apply for, because we are designated a Super Fund site. We encourage you to continue to move forward to a final decision and not allow other entities to influence your decision.

Sincerely,



Terrie Casey
Mayor

CC: Carol Rushin



UNITED STATES ENVIRONMENTAL PROTECTION AGENCY
REGION 8, MONTANA OFFICE
FEDERAL BUILDING, 10 W. 15TH STREET, SUITE 3200
HELENA, MONTANA 59626

Ref: 8MO

April 17, 2008

Honorable Terrie Casey
Mayor
City of East Helena
P.O. Box 1170
East Helena, MT 59635

Dear Mayor Casey:

Thank you for your letter of April 1 in which you asked EPA to complete the East Helena Record of Decision (ROD), and reiterated the City of East Helena's support for the preferred alternative in EPA's East Helena Proposed Plan. I regret I have not been able to meet the previous target dates to complete the ROD. It has been approximately one year since the close of the public comment period for the Proposed Plan.

As you know, EPA and Montana Department of Environmental Quality (MDEQ) disagree over several aspects of EPA's preferred alternative in the Proposed Plan. EPA and MDEQ have met several times to discuss the areas of disagreement particularly the difference in the lead soil remedial action level. The ROD completion was delayed in hopes of an agreement being reached with the State of Montana which has not yet happened.

Next month, I will be sending the ROD to EPA Headquarters for its review and concurrence. After EPA Headquarters has reviewed the document and I make any needed adjustments, the ROD will be forwarded to MDEQ. At that time, MDEQ will complete its review, and I anticipate will be ready to make its decision about the selected remedy.

The above-described schedule means the ROD may not be finalized until late July at the earliest. I am committed to complete the ROD as expeditiously as possible and will update you periodically on its status. Please do not hesitate to call me at (406) 457-5001 with your questions or concerns.

Sincerely,

A handwritten signature in black ink, appearing to read "John Wardell", is written over a horizontal line.

John Wardell
Director
Montana Office



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